Planning & Land Use

City of Molalla
315 Kennel Avenue
PO Box 248
Molalla, Oregon 97038
Phone: (503) 759-0205
Email: communityplanner@cityofmolalla.com
Web: www.cityofmolalla.com/planning

7/30/2025

NOTICE OF DEVELOPMENT CODE AMENDMENT AND CHANGES TO THE COMPREHENSIVE PLAN MAP AND ZONING MAP

ORD2025-07, an ordinance amending Molalla's Development Code, Comprehensive Plan Map, and Zoning Map was adopted on July 23, 2025 and will become final on August 22, 2025. This amendment adopts efficiency measures that:

- Changed the process for accessory dwelling approvals from a Type II process to a Type I process in the City's development code

- Made zoning map and comp plan map changes that addressed land needs and reduced land surpluses identified in the City's recently adopted Housing Needs Analysis and Economic Opportunities Analysis.

This ordinance repealed and replaced ORD2025-05, which was a similar ordinance but included rezoning of industrial areas to residential that were stricken from this ordinance.

You may review a copy of decision materials online at https://current.cityofmolalla.com/urban-growth-boundary or at Molalla City Hall. The office is at 117 N Molalla Ave, Molalla, Oregon 97038. Office hours are 8:00 a.m. to 4:30 p.m., Monday through Friday. You may receive a copy of the decision by mailing/emailing your request for information to the Molalla City Recorder (recorder@cityofmolalla.com). Digital copies can be obtained for free. Printed copies will be charged at the printing cost. Call Community Development at 503-759-0205 if you have questions.

If you believe that the amendment does not comply with applicable regulations, you may submit an objection to the Oregon Department of Land Conservation and Development. An objection must contain three elements. Address each of these in your objection:

1. Show how you participated in the city's adoption process either by speaking at a public meeting or by sending written comments about the proposal;

2. Explain your objection to the adopted amendment. Be as specific as possible, including what goal, rule, or statute has been violated and why; and

3. Recommend a specific change that would resolve your objection.

Submit the objection in hard copy or via e-mail to:

Attention: Periodic Review Specialist

Department of Land Conservation and Development

635 Capitol Street NE, Suite 150

Salem, OR 97301

E-mail: DLCD.PR-UGB@dlcd.oregon.gov

DLCD must **receive** the objection no later than 21 days from the date the notice was sent by the local government (the postmark date if mailed). Send a copy of the objection to the city planning department at communityplanner@cityofmolalla.com.

If you have questions about DLCD's review of this work task, please contact the DLCD Regional Representative: Kelly Reid, 971-345-1987 or kelly.reid@dlcd.oregon.gov

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Affidavit of Notice

On July 31, I oversaw the sending of noticing of the Molalla City Council decision to adopt ORD2025-07 to the following persons who testified either orally or in writing in hearings associated with that ordinance, including the repealed and replaced ORD2025-05:

Sent Notice By Email Only:

Neelam Dorman, Glen Bolen, Region 1 Development Review
Oregon Department of Transportation
ODOT_R1_DevRev@odot.oregon.gov
Glen.A.BOLEN@odot.oregon.gov
Neelam.DORMAN@odot.oregon.gov

Sent Notice By Mail Only:

Teri Larsen & Bob Axmaker
13353 S Molalla Forest Rd
Molalla, OR 97038
503-829-5222

Sent Both Mail and Email Notice:

Lyle Stratton
1316 NE 99th S. Vancouver, WA 98665
520-909-4424
lyle@lylestratton.com

Mary Kyle McCurdy
1000 Friends of Oregon 340 SE 6th Ave
Portland, OR 97214
503-497-1000
mkm@friends.org

James Bobst
Pacific Fibre Products, Inc.
PO Box 278 / 20 Fibre Way

Longview, WA 98632
360-577-7112
jbobst@pacfibre.com

Signed:

Planning Manager

7/31/2025

CITY OF MOLALLA
CITY COUNCIL REGULAR MEETING
AGENDA

Civic Center | 315 Kennel Avenue
Wednesday, July 23, 2025 | 7:00 PM

NOTICE: City Council will hold this meeting in-person and through video Live-Streaming on the City's Facebook Page and YouTube Channel. Written comments may be delivered to City Hall or emailed to recorder@cityofmolalla.com. Submissions must be received by 12:00 p.m. the day of the meeting.

This institution is an equal opportunity employer.

1. EXECUTIVE SESSION - Begins at 6:00PM and is closed to the Public.

Held pursuant to Oregon Public Record Law, ORS 192.660(2): (e) To conduct deliberations with persons designated by the governing body to negotiate real property transactions.

2. CALL TO ORDER AND FLAG SALUTE

3. ROLL CALL

4. CONSENT AGENDA

A. City Council Meeting Minutes - June 25, 2025

5. PRESENTATIONS, PROCLAMATIONS, CEREMONIES

A. Water Intake Structure Pre-Design Presentation

6. PUBLIC COMMENT

(Citizens are allowed up to 3 minutes to present information relevant to the City but not listed as an item on the agenda. Prior to speaking, citizens shall complete a comment form and deliver it to the City Recorder. The City Council does not generally engage in dialogue with those making comments but may refer the issue to the City Manager. Complaints shall first be addressed at the department level prior to addressing the City Council.)

7. PUBLIC HEARINGS

A. Ordinance No. 2025-07: Repeals and Replaces Ordinance No. 2025-05, Efficiency Measures; Changing Accessory Dwelling Unit Approvals from a Type II to a Type I Process and Comprehensive Plan Map and Zoning Map Changes (Zinder/Corthell)

8. ORDINANCES AND RESOLUTIONS

A. Ordinance No. 2025-07: Repeals and Replaces Ordinance No. 2025-05, Efficiency Measures; Changing Accessory Dwelling Unit Approvals from a Type II to a Type I Process and Comprehensive Plan Map and Zoning Map Changes (Zinder/Corthell)
B. Resolution No. 2025-17: Declaring the City's Election to Receive State Revenue Sharing
C. Resolution No. 2025-18: Certifying All Requirements to Receive State Shared Revenues Have Been Met
D. Resolution No. 2025-20: Adopting the Water Intake Structure Pre-Design Report

9. GENERAL BUSINESS

A. Future City Council Meetings

10. STAFF COMMUNICATION

11. COUNCIL COMMUNICATION

12. RECONVENE REGULAR SESSION

13. ADJOURN

Agenda posted at City Hall, Library, and the City Website at http://www.cityofmolalla.com/meetings.This meeting location is wheelchair accessible. Disabled individuals requiring other assistance must make their request known 48 hours preceding the meeting by contacting the City Recorder's Office at 503-829-6855.

CITY OF MOLALLA

Staff Report

Agenda Category: CONSENT AGENDA

Agenda Date: Wednesday, July 23, 2025
Submitted by: Christie Teets, City Recorder
Approved by: Dan Huff, City Manager

SUBJECT: City Council Meeting Minutes - June 25, 2025

ATTACHMENTS:
3a 6-25-2025 CC Meeting Minutes Draft.pdf
1 Public Comment - J Gilbert.pdf
2 Public Comment - C. Goldin.pdf
3 Public Comment - P. Lantz.pdf
4 Public Comment - M McCurdy.combined.pdf
5 Public Comment - J Bobst.combined.pdf

City of Molalla
City Council - Regular Meeting
Minutes – June 25, 2025

Molalla Civic Center | 315 Kennel Ave. | Molalla, OR

CALL TO ORDER

The Molalla City Council Meeting of June 25, 2025 was called to order by Mayor Scott Keyser at 7:00pm.

COUNCIL ATTENDANCE

Present: Mayor Scott Keyser, Council President Eric Vermillion, Councilor Terry Shankle, Councilor Doug Gilmer, and Councilor Martin Bartholomew.
Absent: Councilor Leota Childress

STAFF IN ATTENDANCE

Dan Huff, City Manager; Christie Teets, City Recorder; Mac Corthell, Assistant City Manager; Cindy Chauran; Finance Director; and Dan Zinder, Senior Planner.

APPROVAL OF AGENDA

Approved as presented.

CONSENT AGENDA

A. Work Session Meeting Minutes - June 11, 2025
B. City Council Meeting Minutes - June 11, 2025

ACTION:
Council President Vermillion moved to approve the Consent Agenda; Councilor Shankle seconded. Motion passed 5-0.
AYES: Gilmer, Shankle, Vermillion, Bartholomew, Keyser.
NAYS: None.
ABSENTIONS: None.

EXECUTIVE SESSION ANNOUNCEMENT

Mayor Keyser stated prior to the regular City Council meeting, Council met in Executive Session (pursuant to *ORS 192.660(2)(d) To conduct deliberations with persons designated by the governing body to carry on labor negotiations)* and had discussed the Public Works Teamsters employment contract, with a decision to be made during Agenda Item 8G.

PRESENTATIONS, PROCLAMATIONS, CEREMONIES

None.

PUBLIC COMMENT

None.

PUBLIC HEARINGS

A. Ordinance No. 2025-07: Repeals and Replaces Ordinance No. 2025-05, Efficiency Measures; Changing Accessory Dwelling Unit Approvals from a Type II to a Type I Process and Comprehensive Plan Map and Zoning Map Changes

Mayor Keyser stated Ordinance 2025-07 required a Public Hearing, with no Council conflict of interest stated, Public Hearing was opened at 7:03pm.

Senior Planner Dan Zinder presented Ordinance 2025-07, which repeals and replaces Ordinance 2025-05 to implement Efficiency Measures required before Urban Growth Boundary expansion. The Ordinance changes accessory dwelling units from Type 2 to Type 1 approval (administrative review without noticing requirements) and includes Comprehensive Plan and Zoning Map changes to address land deficits and surpluses identified in the Housing Needs Analysis. The repeal was necessary because ODOT raised concerns about industrial-to-commercial rezonings potentially increasing trip counts at key intersections, so most of those rezonings were removed from this version. The changes gain 11.35 acres of residential land that could accommodate about 57 of the 1,098 needed low-density housing units, 27 acres of medium-density unconstrained land for roughly 243 of 499 needed units, and about 7 acres of high-density land to meet all R3 needs. The Ordinance loses 9.42 acres of industrial land, mostly in the 0-10 acre range and about 47.33 acres of unconstrained land moved to Residential zoning. Public Comment from ODOT supported the revised ordinance without the inclusion of the industrial to commercial rezoning. *(For full presentation please refer to video minutes 07:22 – 18:40)*

PUBLIC COMMENT

Teresa Larson, S Molalla Forest Road, shared her opposition to Ordinance No. 2025-07.

City Recorder, Christie Teets, shared legal counsel, confirmed reading public submissions into the record was not required, submissions were provided to all Council members and will become part of the meeting minutes and final packet.

Mayor Keyser expressed frustration with ODOT, stating they mislead the City about traffic capacity while imposing requirements without addressing the City's needs. He clarified he will not vote for southward UGB expansion due to economic concerns, noting developers may not find it feasible to build south of the City, as it is not economically feasable.

Council members echoed Mayor Keyser's opposition to southward UGB expansion, with multiple Councilors stating they would not vote for southern expansion and expressed concern about shielding businesses from future complaints.

Assistant City Manager Corthell recommended tabling the Ordinance to allow staff time to research deed restrictions and other tools to ensure compatibility between residential and industrial uses and emphasized opportunity to research Council's concerns

ACTION:

Mayor Keyser made a motion to table Public Hearing discussion for Ordinance No. 2025-07, to a future meeting until more information can be presented by City staff; Council President Vermillion seconded. Motion passed 5-0.

AYES: Gilmer, Shankle, Vermillion, Bartholomew, Keyser.
NAYS: None.
ABSENTIONS: None.

Public Hearing tabled at 7:27pm.

ORDINANCES AND RESOLUTIONS

A. Ordinance No. 2025-07: Repeals and Replaces Ordinance No. 2025-05, Efficiency Measures; Changing Accessory Dwelling Unit Approvals from a Type II to a Type I Process and Comprehensive Plan Map and Zoning Map Changes

Mayor Keyser confirmed no motion was required to remove item 8A from Agenda. Item removed.

B. Resolution No. 2025-10: Establishing a Parks Fee in Lieu of Land Dedication

Assistant City Manager Corthell presented Staff Report on implementing the updated Parks and Trails Master Plan adopted earlier this year. The plan included Comprehensive Plan Amendments, notably reducing the parkland dedication requirement from 10 acres per 10,000 residents to 7 acres per 10,000 residents. The Resolution proposed using total market value (land plus building values) as the basis for Fee-In-Lieu calculations. Mr. Corthell further explained this approach ensures fairness between developers who dedicate land versus those who pay fees, noting that developers dedicating land lose the value of a developed lot, not just bare land. Using tax assessed value for Fee-In-Lieu would create inequality, as those paying fees would contribute significantly less than those dedicating land. The Park Fee-In-Lieu payment calculation equals the required dedication acreage (calculated under the new ordinance) divided by total buildable net acres, then multiplied by the total market value of the properties. Most importantly Mr. Corthell emphasized the resolution explicitly states all fees collected be used exclusively for the acquisition, development, and maintenance of public parks and recreational facilities.

ACTION:

Council President Vermillion moved to adopt Resolution No. 2025-10: A Resolution of the City of Molalla, Oregon Establishing a Parks Fee in Lieu of Land Dedication; Councilor Gilmer seconded. Motion passed 5-0.

AYES: Gilmer, Shankle, Vermillion, Bartholomew, Keyser.
NAYS: None.
ABSENTIONS: None.

C. Resolution No. 2025-12: Authorizing Appropriations for Expenditure of a Special Purpose Gift

Finance Director Cindy Chauran reported that the City received $100,000 from Molalla Communications for Chief Yelkus Park; along with two additional Special Gifts: $10,000 for Fox Park playground equipment and $35,000 for the Clark Park Pavilion. The resolution formally recognized donations and showcase the City's partnership with Molalla Communications.

ACTION:

Council President Vermillion moved to approve Resolution No. 2025-12: Authorizing Appropriations for Expenditure of a Special Purpose Gift; Councilor Gilmer seconded. Motion passed 5-0.

AYES: Gilmer, Shankle, Vermillion, Bartholomew, Keyser.
NAYS: None.
ABSENTIONS: None.

D. Resolution No. 2025-13: Declaring a Pressing Necessity and Increasing Appropriations in the Storm Water Fund, the Cost of Which is Supplied by Private Resources

Assistant City Manager Corthell reported in February, the City had responded to two separate industrial spills of green liquid and plastic pellets that entered the storm water system. The new storm water bioswale standards prevented the materials from reaching Bear Creek, but cleanup efforts were expensive and required immediate emergency response to prevent groundwater contamination. The City contracted River City Environmental for cleanup services and held both businesses accountable for costs plus staff time. Businesses paid their share and the City required authority to move funds into the storm water budget.

ACTION:
Council President Vermillion moved to approve Resolution No. 2025-13: Declaring a Pressing Necessity and Increasing Appropriations in the Storm Water Fund, the Cost of Which is Supplied by Private Resources; Councilor Shankle seconded. Motion passed 5-0.

AYES: Bartholomew, Vermillion, Shankle, Gilmer, Keyser.
NAYS: None.
ABSENTIONS: None.

E. Resolution No. 2025-14: Authorizing a Contingency Transfer in the General Fund

Finance Director Chauran explained that due to Oregon Budget Laws and the transition to modified accrual accounting created 13 periods instead of 12 this year, budget adjustments were needed to prevent overspending, recommended moving $150,000 from contingency - $100,000 to General Fund and $50,000 to Court Fund to provide safeguard for the 13th period.

ACTION:
Council President Vermillion moved to approve Resolution No. 2025-14: Authorizing a Contingency Transfer in the General Fund; Councilor Shankle seconded. Motion passed 5-0.

AYES: Gilmer, Shankle, Vermillion, Bartholomew, Keyser.
NAYS: None.
ABSENTIONS: None.

F. Resolution No. 2025-15: Declaring Councilor RaeLynn Botsford's Seat Vacant

City Recorder Christie Teets reported that the office had received Councilor Botsford's resignation on the 11th of June. Resolution formally vacates her position. Recorder Teets provided a recommended timeline for filling the vacancy.

ACTION:
Council President Vermillion moved Molalla City Council to approve Resolution No. 2025-15: Declaring Councilor RaeLynn Botsford's Seat Vacant; Councilor Gilmer seconded. Motion passed 5-0.

AYES: Gilmer, Shankle, Vermillion, Bartholomew, Keyser.
NAYS: None.
ABSENTIONS: None.

G. Resolution No. 2025-16: Adopting the Teamsters Labor Contract 2025-2028

Assistant City Manager Corthell shared City renegotiates the Teamsters Labor Agreement every three years, this contract takes effect July 1, 2025. He noted negotiations went well with significant give and take on both sides.
Mayor Keyser further confirmed the topic discussed during the evening's Executive Session.

ACTION:
Council President Vermillion moved to approve Resolution No. 2025-16: Adopting the Teamsters Labor Contract 2025-2028; Councilor Gilmer seconded. Motion passed 5-0

AYES: Gilmer, Shankle, Vermillion, Bartholomew, Keyser.
NAYS: None.
ABSENTIONS: None.

GENERAL BUSINESS

A. July City Council Meetings – Discussion

Due to conflicting schedules and the absence of both City Manager Huff and Assistant City Manager Corthell due to a conference, City Manager Huff recommended canceling the July 9th Council Meeting and noted the possibility of a full schedule for the following July 23rd Council Meeting.

ACTION:
Mayor Keyser moved to cancel July 9th Council Meeting; Councilor Gilmer seconded. Motion passed 5-0.

AYES: Gilmer, Shankle, Vermillion, Bartholomew, Keyser.
NAYS: None.
ABSENTIONS: None.

B. Street Pavement Conditioning Index – Discussion continued

Assistant City Manager Corthell shared staff is in the pre-engagement phase of data collection, having gathered information from Silverton, Oregon City, Sandy, Canby, and Gladstone regarding gas taxes and street fees. Key findings show every surveyed city has utility fees for streets, parks, or public safety, with Sandy and Molalla being the only Cities without street utility fees. Cities without local gas taxes are typically within the metro boundary where other taxes apply, Oregon City charging $16 monthly residential utility fees. Mr. Corthell received gas gallons data for Molalla but noted it includes six different fuel types requiring further analysis. He requested Council input on additional data points needed and feedback on the public engagement plan. Council discussed waiting to see the outcome of House Bill 2025 before proceeding with taxpayer funding discussions.

C. Comical Signage Consideration – Parks CPG (Gilmer)
D.

Council enjoyed the humorous approach; they felt the current version was too negative and preferred positive humor instead. The Council will review edits before making a motion rather than approving the current design.

STAFF COMMUNICATION

- **City Manager Huff**, shared that he would be out of the office on Friday. He also mentioned his upcoming participation in another Library Task Force meeting. He reflected on the City's long-standing tradition of using the Fourth of July and Buckaroo events as a benchmark to showcase annual improvements in Molalla. This year continues that tradition with several visible enhancements, including the nearly completed police facility, the newly paved Mathias Road, and improvements in front of Bolander Field. He also highlighted the completion of the Pavilion at Clark Park. Mr. Huff expressed pride in City employees for their dedication and work ethic also thanked the Council for being a collaborative and effective team- ability to work positively together makes Molalla a great place to be.
- **Assistant City Manager Corthell**, shared the Wastewater Treatment Plant project continues to progress well, with additional concrete pours occurring and notable progress visible at the site. He encouraged Councilors to schedule a visit to see the extensive work being done, particularly the impressive installation of conduit in the control building. On July 23rd, Council will receive the completed pre-design report for the new water intake, with a presentation from Gordon Monroe of Tetra Tech. Paving projects for the fiscal year have wrapped up, and preparations underway for the next round from the CAPS plan. Additionally, staff are developing a five-year contract for crack seal and slurry work. Lastly, work on the enhanced pedestrian crossing at North Molalla Avenue and Francis experienced a delay due to right-of-way issues the goal remains to have the crossing completed before the start of the school year.
- **Finance Director Chauran**, no report.
- **City Recorder Teets**, no report.
- **Senior Planner Zinder**, no report.

COUNCIL COMMUNICATION

- Councilor Bartholomew, no report.
- Councilor Gilmer, no report.
- Councilor Shankle, reminded viewers and provided information for 4th of July events such as the Buckeroo & Parades.
- Councilor Childress, no report.
- Council President Vermillion shared Parks CPC will hold Annual Garage Sale Fundraiser from July 24–26th. The next CPC meeting will be held July 17 at 5:30 p.m. at Clark Park under the new pavilion, with thanks given to Molalla Communications for their generous support. Council President raised concerns about House Bill 2025 and encouraged all to contact Representative Rick Lewis and Senator Fred Girod to express their views. Lastly, he noted his opposition to expanding the Urban Growth Boundary (UGB) southward and reminded everyone to enjoy the upcoming Fourth of July events safely.

- Mayor Keyser, Mayor Keyer encouraged residents to enjoy Molalla's Fourth of July celebrations, noting the City's reputation as "Fourth of July Town USA." He highlighted that Molalla River Brewing and other regular establishments will remain open and emphasized that the City's atmosphere transforms starting July 1st. The Mayor specifically urged pet owners to protect their animals during fireworks.

For the complete video account of the City Council Meeting, please go to YouTube
"Molalla City Council Meetings -June 11, 2025"

ADJOURN
Mayor Keyser adjourned the meeting at 8:17 PM

_____
Scott Keyser, Mayor

PREPARED BY:

_____
Crystal Robles, Deputy City Recorder

ATTEST:

_____
Christie Teets, CMC - City Recorder

Attachments:

- Public Hearing Ordinance No. 2025-07, Senior Planner Dan Zinder's Presentation
- Public Hearing Public Comments regarding Ordinance No. 2025-07

From: Christie Teets
To: Dan Huff
Cc: Christie Teets
Subject: FW: Testimony for July 25 Public Meeting
Date: Tuesday, June 24, 2025 1:57:47 PM

Mayor & Council,

Please see the public comment submitted below regarding 2024 PSU Population Forecast.

This message will also be included in the final packet.

Best,

Christie Teets, CMC
City Recorder
City of Molalla | 117 N. Molalla Ave. | Molalla, OR 97038
Phone: 503.759.0285
www.cityofmolalla.com

From: Jim Gilbert <jgilbert@oregonsbest.com>
Sent: Friday, June 20, 2025 8:10 PM
To: City Recorder <recorder@cityofmolalla.com>
Cc: Bill Taylor <taylorbillfran@gmail.com>; Corwin DiMeo-Ediger <corwinjde@gmail.com>; Tony Brooks <tony.brooks@AgGeoNW.com>; Jennifer Rueda <pebblesmom1@gmail.com>; Jan Courtain <jancc9957@msn.com>; Laurie Freeman Swanson <lfsfreemanfarm@gmail.com>; Josh Kraemer <joshkraemer24@gmail.com>; Laura Johnson-Graham <laurajohnsongraham@hotmail.com>; Mary Kyle McCurdy <mkm@friends.org>; Jessica Nocket <jessnocket@gmail.com>; Cc: REID Kelly * DLCD <Kelly.REID@dlcd.oregon.gov>
Subject: Testimony for July 25 Public Meeting

Date: June 20, 2025

To: Molalla City Council, Planning Commission and Interested Parties

Subject: Use the 2024 PSU Population Forecast to plan for future growth

You are currently using the PSU population forecast numbers from 2020 to plan for an increase in population of 5,432 people by 2042. Those numbers were revised in the 2024 PSU population forecast, which reduced the projected population growth to 2,932 in that same time period, a decrease of 2,500 people or almost 50%. It is important that you use this revised forecast for the following reasons:

1. Reduced infrastructure cost: Using the more realistic 2024 population forecast will save taxpayers thousands of dollars in the cost of new sewers, roads, water lines and other infrastructure.

2.Lessen the impact on water supply: Water flow in the Molalla River, the soles source of water for the city, is already severely depleted in the fall, threatening city residents with water use restrictions and hurting wildlife and the environment. Using the 2024 figures will reduce the negative consequences of increased water use from the river.

3. Less highway congestion: As most Molalla residents drive elsewhere to work, our roads are already overcrowded and especially congested during rush hours. Using the revised forecast numbers and planning for more realistic population growth will help avoid even more difficult traffic conditions.

4. Protecting our fertile farmland and rural landscape: Using the 2024 population forecast numbers will eliminate the need to expand the Urban Growth Boundary and avoid the paving over of farmland, an important part of our local economy which feeds us all and contributes to our rural quality of life.

Thank you,

Jim Gilbert and Lorraine Gardner

Northwoods Nursery
28696 S. Cramer Rd.
Molalla, OR 97038
wk. 503-651-3737
cell 503-502-6925
www.northwoodsnursery.com

An Oregon Story - *Saving Our Beaches, Farmland & More*
Watch & Share the Film: https://www.anoregonstory.com/oregon-story-film

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An Oregon Story - *Saving Our Beaches, Farmland & More*
Watch & Share the Film: https://www.anoregonstory.com/oregon-story-film

From: Christie Teets
To: Dan Huff
Cc: Christie Teets
Subject: FW: For tomorrow "s City of Molalla/Planning Department – Proposed UGB expansion
Date: Wednesday, June 25, 2025 10:16:30 AM

Mayor & Council,

Please see the public comment submitted below regarding the UGB expansion.

This message will also be included in the final packet.

Best,

Christie Teets, CMC
City Recorder
City of Molalla | 117 N. Molalla Ave. | Molalla, OR 97038
Phone: 503.759.0285
www.cityofmolalla.com

From: Carine Goldin <goldincheese@gmail.com>
Sent: Tuesday, June 24, 2025 3:26 PM
To: Christie Teets <cteets@cityofmolalla.com>
Subject: For tomorrow 's City of Molalla/Planning Department – Proposed UGB expansion

June 24, 2025
To: City of Molalla/Planning Department – Proposed UGB expansion
From: Carine M. Goldin
32880 South Sawtell Road, Molalla OR 97038

I am writing to express my strong opposition to the City of Molalla's proposed expansion of the Urban Growth Boundary (UGB) into exception lands to the south. While I understand the city has identified approximately 198 acres as necessary to accommodate projected population growth, I believe this projection is based on outdated and inaccurate data.

Specifically, the population forecast presented during the city's April 2025 meeting relied on figures from Portland State University (PSU) that were calculated during the pandemic year of 2020. These numbers have since been revised by PSU, reflecting a nearly 50% decrease in projected growth.

Additionally, according to this article (link below) large employment companies are leaving the state of Oregon, most likely for tax reasons, and new ones are not coming into our state.

https://philomathnews.com/vanishing-act-the-departure-of-oregon-companies-speaks-to-a-bigger-problem-for-the-state/

I strongly feel that the city needs to retreat in their thinking that Molalla will be on the brink of a population and economic boom. Expanding the UGB into agricultural lands will impose disproportionate infrastructure costs, strain water availability, and compromise the livability of our community. A more prudent and sustainable approach would be to focus on infill development within existing city limits, which can accommodate modest growth without sacrificing farmland or overextending city services.

I respectfully request that this letter be entered into the public record for tomorrow's meeting. I urge city leaders to reconsider the proposed UGB expansion and instead pursue a growth strategy grounded in current data, fiscal responsibility, and long-term community well-being.

Sincerely,

Carine M Goldin

--
Carine M. Goldin
Molalla, Oregon

From: Christie Teets
To: Dan Huff
Cc: Christie Teets
Subject: FW: JUNE 25TH AGENDA: UGB Feedback & Population Forecast
Date: Tuesday, June 24, 2025 1:42:48 PM

Mayor & Council,

Please see the public comment submitted below regarding the Urban Growth Boundary.

This message will also be included in the final packet.

Best,

Christie Teets, CMC
City Recorder
City of Molalla | 117 N. Molalla Ave. | Molalla, OR 97038
Phone: 503.759.0285
www.cityofmolalla.com

From: Paige Lantz <paige@lantz-construction.com>
Sent: Tuesday, June 24, 2025 11:07 AM
To: Community Planner <communityplanner@cityofmolalla.com>; Dan Zinder <dzinder@cityofmolalla.com>; Scott Keyser <skeyser@cityofmolalla.com>
Cc: Lee Lantz <lee@lantz-construction.com>
Subject: JUNE 25TH AGENDA: UGB Feedback & Population Forecast

ATTN: Molalla Mayor, City Council, Planning Commission, and 3J Consulting

I ask that these comments please be included in the June 25th, 2025 City Council Meeting and the next Planning Commission Meeting Agenda Packets, and to be submitted in the record.

Hello - My name is Paige Lantz and my husband, Lee Lantz, and I live at 32951 S. Wilhoit Rd. My in-laws (John and Eileen Lantz) live next door at 33061 S. Wilhoit, uncle lives next door on the other side (Lynn and Debbie Lantz) at 32845 S Wilhoit, and cousin (Mason Lantz) owns property touching all three of our properties. All four of these Lantz family properties, totaling about 160 acres, border around half of the southern edge of Sub-Area 4 of the proposed UGB expansion.

I am writing to share my concerns with the current Urban Growth Boundary planning process, specifically as it relates to the inaccurate Molalla population forecast currently being used to plan for the UGB expansion.

It has become apparent through some investigation by community members that **there is a large discrepancy between the 2020 population forecast being used for planning and the updated (decreased) 2024 population forecast.** I am very concerned that the current 20yr UGB planning cycle is using the older (outdated) population forecast from 2020 and not the updated 2024 population forecast. **I am asking for the City Council and the Planning Commission to please investigate this population forecast discrepancy further before deciding on or voting on any UGB, zoning, or planning related issues and hopefully adopt the population forecast calculated in 2024 instead of the one from 2020.**

Upon reviewing the housing needs analysis, capacity documents, and population forecasts, I saw a large difference between the forecasted population for Molalla from the 2020 estimate being used for planning and the updated 2024 forecast.

The newest **2024 population forecast** places the 2042 population estimate at 13,158, with a **growth of 2,930 residents**. The **2020 population forecast** noew being used for UGB planning projects Molalla's 2042 population at 15,660, a **growth of 5,432 residents.** So, *the current UGB planning process is using a population forecast that is double the more recent, more accurate forecast*. This is a very large, and costly, difference in forecasted population given the millions of dollars of potential City and citizen costs for infrastructure and service improvements with a UGB expansion. The UGB planning process itself is not efficiently using taxpayer dollars if the planning process is using inaccurate data.

Based on rough math, the lower, more accurate population forecast produces a need for only 84 new units, not 928 for the UGB expansion. **I believe the UGB expansion plan needs to be updated to reflect a need for only 84 new units, not 928.**

A fellow concerned citizen, Corwin DiMeo learned that the main reason for the large variation between the 2020 and 2024 population forecasts were COVID influenced statistical errors and data quality issues. Unfortunately, these variables drastically over-estimated the growth potential for Molalla within the 20 year time horizon and **the population forecast calculated in 2020 should not be used for planning.**

The Portland State University Population Research Center, Oregon Department of Administrative Services, and DLCD ALL acknowledge this "need" to accommodate the population forecasted in 2020 for Molalla's growth does not actually exist.

DLCD allows the adoption of updated data at a City's discretion. **I am asking the City of Molalla and all involved in the UGB planning process to please adopt the Molalla Population Forecast calculated in 2024 immediately, and to NOT use the inaccurate and flawed Molalla Population forecast calculated erroneously in 2020.**

The statistical basis for the population forecast from 2020 is inherently flawed and will not stand up in any court of law or legislative proceedings.

Adopting the population forecast calculated in 2024 would save current residents unnecessary costs tied to any UGB expansion, improve planning accuracy, and allow the City to focus on realistic, efficient, and thoughtful economic expansion better aligned with Molalla's rural roots and current community members' desire to maintain our City's character and rural legacy.

Thank you so much for considering my feedback and please do not hesitate to reach out with any questions, guidance, or feedback for me.

Paige Lantz
32951 S Wilhoit Rd., Molalla, OR 97038
503.318.6228
paige@lantz-construction.com

_____

Paige Lantz
Lantz Construction - *Operations Manager*
32951 S Wilhoit Rd., Molalla, OR 97038
503.318.6228

From: Christie Teets
To: Dan Huff
Cc: Christie Teets
Subject: FW: Molalla Efficiency Measures, ORD 2025-07 - corrected with footnotes
Date: Tuesday, June 24, 2025 1:46:50 PM
Attachments: IU06dmvYDjN1RILI.png
Molalla Efficiency Measures testimony w_footnotes.pdf

Mayor & Council,

Please see the public comment submitted below regarding Ordinance No. 2025-07, Efficiency Measures.

This message will also be included in the final packet.

Best,

Christie Teets, CMC
City Recorder
City of Molalla | 117 N. Molalla Ave. | Molalla, OR 97038
Phone: 503.759.0285
www.cityofmolalla.com

From: Mary Kyle McCurdy <mkm@friends.org>
Sent: Monday, June 23, 2025 11:17 AM
To: City Recorder <recorder@cityofmolalla.com>; Community Planner <communityplanner@cityofmolalla.com>; Dan Zinder <dzinder@cityofmolalla.com>
Cc: Kelly.REID@dlcd.oregon.gov; Robb Wolfson <robb@friends.org>; Mary Kyle McCurdy <mkm@friends.org>
Subject: Re: Molalla Efficiency Measures, ORD 2025-07 - corrected with footnotes

Attached pleased find the correct version of our testimony - the footnotes that were missing in the version we sent earlier and are included here. Thank you.

Mary Kyle McCurdy

To: Molalla City Council

c/o: City Recorder, Christie Teets

Planning Support Specialist, Jessica Wirth

Dan Zinder, Senior Planner

Attached please find the testimony of 1000 Friends of Oregon on the city of Molalla's proposed ORD2025-07, regarding efficiency measures, which is scheduled to be before the Molalla City Council on June 25, 2025. Please include these in the record, and include 1000 Friends on the mailing list for this and related items. Thank you.

Mary Kyle McCurdy
Associate Director
Pronouns: she/her
1000 Friends of Oregon
503.497.1000 x130

1000 Friends of Oregon
340 SE 6th Ave, Portland, OR 97214
www.friends.org
503-497-1000

June 23, 2025

To: Molalla City Council

From: 1000 Friends of Oregon
Mary Kyle McCurdy, Associate Director and Robb Wolfson, Legal Apprentice

Subject: Proposed Efficiency Measures Ordinance, ORD2025-07

Following are the comments of 1000 Friends of Oregon on the city of Molalla's proposed efficiency measures to address needed housing capacity inside its urban growth boundary (UGB). While we support the proposed actions as good first steps, for the reasons stated below, we find they are not sufficient to meet the legal requirements under Goal 14 and related statutes and administrative rules.

As required by law, Molalla inventoried the land inside its UGB to determine whether adequate development capacity exists to accommodate its current and projected needs, including on vacant and redevelopable land. The City conducted a Housing Needs Analysis (HNA) and Housing Production Strategy (HPS), and proposes Ordinance 2025-07, with its accompanying Findings of Fact.

Prior to expanding its Urban Growth Boundary (UGB), the City is required by Goal 14 and related statutes, including ORS 197A.210(2), to meet the urban efficiency standards described in ORS 197A.100(3) and OAR 660-024-0050. These standards require the City to demonstrate that it has enacted efficiency measures reasonably likely to accommodate its residential housing needs over the next 20 years on land already inside its UGB. The City's proposed efficiency measures are not adequate to meet these legal requirements.

1. The City's proposed ordinance to make Alternative Dwelling Unit (ADU) approvals a Type I Review Process is a good first step, but the City must analyze how this proposed action will contribute to land efficiency and the city's housing needs over the next 20 years to comply with the state's urban efficiency requirements.

Under ORS 197A.425, Molalla is required to allow at least one ADU for each detached single-family dwelling, subject to reasonable local regulations relating to siting and design. The City's action to change ADU approvals to a ministerial Type I Review Process is consistent with state requirements already in place. 1000 Friends supports this change; it will make the City's ADU permitting process more efficient and less expensive for homeowners.

Despite this positive change, the City has not met the urban efficiency standards outlined under ORS 197A.210(2), 197A.100(3), and OAR 660-024-0050. Importantly, it is questionable this meets the efficiency measure requirement, given that the City was already required by statute to allow ADUs on land zoned to allow single detached dwellings.

Assuming it could be an efficiency measure, the City must demonstrate how this action is reasonably likely to increase land efficiency and accommodate some part of the City's housing need on land already inside its UGB. The City must provide an analysis of the current amount of ADUs, the remaining amount of properties that are eligible to build ADUs, a reasonable estimate of the total amount of ADUs likely to be constructed over the next 20 years resulting from this proposed action, and the impact this would have on the City's housing needs (both in terms of the amount of people and income categories that might be served).

Neither the City's HNA[1] nor its HPS[2] provided this analysis. In the proposed ordinance the City noted that ADUs "could account for some of the gap in available housing for 80% of the AMI,"[3] but provided no further information. Without this analysis, it isn't possible for the City to determine how the proposed action to make ADUs a Type I review process will increase residential land efficiency and contribute to meeting the City's housing needs within its UGB.

In addition, if the City plans to rely on increased construction of ADUs to demonstrate compliance with the land efficiency requirement and to meet some part of its housing need, it should adopt actions beyond this procedural change. We recommend these additional actions the City should take to increase the likelihood that additional ADUs will be constructed, and therefore contribute to the City complying with the urban efficiency standards and meeting some of its housing need:

- Accelerate its plan to reduce system development charges (SDCs) for ADUs. The HPS determined that reducing SDCs could have a moderate impact on ADU production.[4] However, the City's implementation timeline shows it will evaluate SDCs for five years prior to implementation in 2032.[5] Accelerating this would allow the City to experience this moderate impact much sooner.
- Create and distribute to homeowners a guide that includes pre-approved plan sets for ADUs. Molalla could easily adapt its guide from ones already publicly distributed, such as Oregon City's guide or the AARP's model ordinance standards for ADUs. Other detailed sources for information about ADUs include: Innovative Ways to Develop ADUs that Intentionally Help Your Community and ADUs in Oregon: How to Increase Your Property's Value and Functionality.

2. The City's ordinance to upzone vacant and underdeveloped industrial properties for residential and commercial uses is a good first step. However, to comply with the state's

[1] City of Molalla 2022-2042 Housing Needs Analysis, Buildable Lands Inventory. Adopted by Ordinance 2023-07 on July 26, 2023.
[2] Molalla Housing Production Strategy. Adopted by Resolution 2025-05 on March 19, 2025.
[3] Exhibit A: Findings of Fact for ORD 2025-05. March 26, 2025. p.4.
[4] Molalla Housing Production Strategy. Adopted by Resolution 2025-05 on March 19, 2025. p.15.
[5] Molalla HPS, p.31.

urban efficiency requirements, the City must analyze how the upzoning will impact its housing needs over the next 20 years, and consider zoning these lands for higher residential densities.

Under OAR 660-024-0050(1), the City must inventory land inside its UGB to determine whether there is adequate development capacity to accommodate its different needs over the 20 year planning period. The City did this and determined that almost 71 acres of vacant or underutilized industrial land could be re-zoned to the following classifications:[6]

- R-1 Low Density Residential Acres: 11.35 acres gained
- R-2 Medium Density Residential Acres: 27.07 acres gained
- R-3 Medium-High Density Residential Acres: 7.15 acres
- C-2 General Commercial Acres: 19.15 acres gained
- C-1 Central Commercial Acres: 2.95 acres gained

Rezoning underutilized land from one category to other more appropriate categories to meet a city's needs is an important land efficiency action. However, some of the City's proposed rezonings are insufficient to show that the city will be efficiently using land within the existing UGB prior to expanding it.

First, the City proposes to rezone over 22 acres of industrial land to commercial use. However, the City's Economic Opportunities Analysis shows it has a deficit of only 15 acres of commercial land.[7] The City should explain why the seven additional acres are being rezoned to commercial rather than to residential use or a mixed commercial/residential zone.

Second, the City has not estimated to what degree its proposed upzonings are reasonably likely to result in more efficient land use by increasing residential development to meet some or all of the city's housing needs over the next 20 years.

Third, the City's HNA concludes that over the 2022-2042 planning period, "future demand anticipates a greater share of medium and high-density housing compared to the current inventory."[8] Given this conclusion, the City's proposal to rezone some surplus industrial land for low density residential use does not represent an efficiency measure that will meet the city's housing needs.

Other evidence also demonstrates the City's need for high-density housing. The HNA projected a need for 1,098 low density units, 499 medium density units, and 399 high density units over the 20-year planning period.[9] The City then noted that 287 multifamily units in the R-3 zone have already been completed since 2022.[10] Rather than seeing this as an indicator of the demand for R-3 multifamily housing and designating more land accordingly, the City stated that since the multi-unit target was nearly complete, its future emphasis will be on zoning land R-1 and R-2 for lower density housing, including through a UGB expansion.[11]

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[6] City of Molalla Staff Report, City File DCA01-2025/ORD2025-05 Efficiency Measures. March 26, 2025. p.3.
[7] Exhibit A: Findings of Fact for ORD 2025-05. March 26, 2025. p.3.
[8] Ibid.
[9] Ibid., p.4
[10] Ibid.
[11] Ibid.

The increasing need and desire for multifamily and duplex housing in the City has a longer trend, too. According to the HNA, between 2011-2017, "70% of the residential development permits proposed multifamily or duplex housing."[12] These trends indicate that planning for only 45% of total housing for duplexes and multifamily housing[13] is significantly lower than the actual need, and is insufficient to meet the requirement for adopting reasonable efficiency measures prior to a potential UGB expansion.

Similar to section 1, the City has not met the urban efficiency standards[14] when evaluating the upzoning of its vacant and underutilized industrial land. The City must provide a reasonable estimate of the total amount of housing likely to be constructed on these lands over the next 20 years and analyze the impact on its housing needs (both in the amount of people and income categories that might be served). Without this, it isn't possible for the City to determine how constructing housing on this land can more efficiently meet its residential needs within its UGB and minimize expansion.

3. The City's parking requirement for duplex housing must be modified to comply with state law.

OAR 660-046-0120(5)(a) prohibits the City from requiring more than a total of two off-street parking spaces for a duplex. However, the City currently has a minimum requirement of three off-street parking spaces for a duplex.[15] The City must conform its parking code to state law, and make an assessment of the degree to which this will result in a more efficient use of land and help meet the City's housing needs. For example, requiring excess offstreet parking, especially for a duplex, can result in a lot being unable to accommodate the duplex at all.

4. High-impact efficiency measures the City should evaluate and adopt to comply with the urban efficiency standards required by statute and rule.

Based on the housing needs documented by the HNA[16] and the evidence of strong demand for medium and higher density housing, the City should take additional measures to ensure that land inside the UGB is being used efficiently prior to a potential expansion. The following moderate to high impact measures, most of which are already proposed in the City's HPS, should be implemented expeditiously:

- Upzone more residential land for R-3 development.
- Raise the minimum density standards in its R-3 and R-5 zones to more fully utilize their capacity. Currently, land zoned R-3 and R-5 can be developed at 8-24 units and 6-24

[12] City of Molalla 2022-2042 Housing Needs Analysis, p.19.
[13] Ibid., p.21.
[14] OAR 660-024-0050
[15] City of Molalla, Title 17 Development Code, Molalla Development Code Title 17, Table 17-3.5.030.A Automobile Parking Spaces by Use. p.100.
[16] Molalla Housing Production Strategy. Adopted by Resolution 2025-05 on March 19, 2025. p.3-4.

units per acre, respectively. These are large spreads, and means properties within these classifications could be developed at only 25%-33% of their potential capacity. Similar cities have set higher minimum standards for their high-density or multi-family dwelling zoning classifications:

- Stayton=13 units[17]
- McMinnville=14 units[18]
- Canby=14 units[19]
- Estacada=15 units[20]
- Woodburn=19 units[21]

- Accelerate adopting cottage cluster standards sooner than 2030.

- Update the development code to define a small dwelling unit as less than 2000 square feet and allow their construction on smaller lots than currently permitted.

- Accelerate adopting a sliding SDC fee schedule based on dwelling size sooner than 2031.

- Defer collecting residential SDCs until the certificate of occupancy is issued.

- Implement a Construction Excise Tax to fund developer incentives and other programs that support the development of high-density housing within the City's Urban Renewal Area.

5. Molalla should base its housing, land, and UGB needs on the most accurate and recent population and housing projections.

Because the City began its HNA in 2022, it used the population forecast available at that time from the Portland State University Population Research Center (PSU). This forecast, from 2020, projected a population increase of 5,432 people by 2042. However, PSU's most recent forecast, from 2024, significantly revised that projection downward. This more accurate forecast projects population growth of approximately 3000 persons by 2042, a decrease of almost 50%.[22]

The Oregon Housing Needs Analysis (OHNA) housing allocations came out in December 2024 and are based on PSU's 2024 population forecast.[23] The City concluded it has a 20-year housing deficit of 1,576 units, based on the outdated population forecast.[24] However, based on the

[17] City of Stayton Chapter 17.16 Zoning. p.16-8.
[18] City of McMinnville Title 17 Zoning, Section 17.22.005. p.145.
[19] City of Canby, Zoning/Development Code, Section 16.20.030(A).
[20] City of Estacada Municipal Code, Chapters 16.24 and 16.60.70
[21] Woodburn Development Ordinance, Section 2.02, Nodal Medium Density Residential p.61.
[22] See, e.g., PSU's population projections for UGBs in Clackamas County. PSU's reduced projection is understandable, given the challenges to conduct the census during Covid and the changes to population patterns post-Covid.
[23] Dept of Administrative Services, Oregon Housing Needs Analysis Methodology, Dec. 2024.
[24] Exhibit A: Findings of Fact for ORD 2025-05. March 26, 2025. p.3.

OHNA report, the state's official projection of total housing need for Mollala over the next 20 years is 1,152 units,[25] a significant reduction.
The City can and should use the most recent PSU population forecast and OHNA housing need allocation, for the following reasons:

- Correlating the City's most updated and accurate population growth projection with its projected housing needs is the most important efficiency measure the City can and should take; it would result in a more efficient use of the City's existing land supply.

- The City is surrounded by some of the most productive farm land in the state, and consuming it needlessly would adversely impact the area's agricultural industry.

- Relying on more accurate population and housing projections does not mean the City needs to undo or significantly revise any of its work to date. The efficiency measures the City proposes in its HPS are still worthwhile to meet the diverse housing needs of its current and future residents.

- It is an inefficient use of land, infrastructure, and scarce public funds (e.g., for construction and maintenance of road, sewer, water systems) to expand the UGB to include land the city will not need to accommodate growth.

[25] OHNA Methodology Report, p. 55.

From: Christie Teets
To: James Bobst; City Recorder
Cc: Dan Zinder
Subject: RE: COMMENTS FOR PUBLIC HEARING: ORD2025-07
Date: Wednesday, June 25, 2025 4:05:25 PM

Mr. Bobst,

I am in receipt of your Public Comment. I will share this with City Council at this evening's meeting, which will also become public record.

Kind Regards,

Christie Teets, CMC
City Recorder
City of Molalla | 117 N. Molalla Ave. | Molalla, OR 97038
Phone: 503.759.0285
www.cityofmolalla.com

From: James Bobst <jbobst@pacfibre.com>
Sent: Wednesday, June 25, 2025 3:45 PM
To: City Recorder <recorder@cityofmolalla.com>
Cc: Dan Zinder <dzinder@cityofmolalla.com>; James Bobst <jbobst@pacfibre.com>
Subject: COMMENTS FOR PUBLIC HEARING: ORD2025-07
Importance: High

City Recorder:

Please accept and consider the following comments regarding Ordinance ORD2025-07.

I represent Pacific Fibre Products, Inc., which operates a heavy industrial business on property appropriately zoned for such use in Molalla. Our bark yard production facility is located at 300 Shaver Avenue, directly across the street from the area identified in Exhibit A of ORD2025-07, which proposes Comprehensive Plan Map and Zone Changes. Specifically, this ordinance seeks to rezone property currently designated as Commercial or Industrial to R-2 Medium-High Density Residential (please see attached reference).

Additionally, we operate a log yard and whole-log chipping operation at 410 Section Street. Both of these contiguous sites are owned by Pacific Fibre Products and are located immediately adjacent to the proposed rezoning area.

We strongly oppose this zoning change.

Pacific Fibre Products, together with Lemmons Trucking (PFP & LTI), has been a committed and responsible member of the Molalla business community since the inception of our

operations in 2015. We take great pride in operating responsibly and being good neighbors. Historically, prior to the start of our operations, Avison and Floragon operated the same sites as PFP for decades as Heavy Industrial log yard and sawmill operations. However, introducing medium- to high-density residential zoning directly adjacent to our heavy industrial operations would create an inherent and foreseeable conflict. Industrial operations inherently involve conditions that are not compatible with residential living—such as the mixing of heavy truck traffic with residential vehicle traffic, extended operational hours, and the generation of noise and other impacts. Approving this rezoning will significantly increase the likelihood of future complaints and conflicts from new residents, despite our ongoing compliance with industrial zoning regulations and our long-standing presence in the area.

While we recognize and support the City's efforts to address the growing need for residential housing, we urge decision-makers to consider more suitable alternatives—such as annexing land on the outskirts of town that is better suited for residential development. Rezoning established industrial or commercial property adjacent to active heavy industrial operations is not a sound planning strategy.

Even Molalla's Municipal Code reinforces this principle. The Heavy Industrial district is specifically intended to accommodate intense industrial uses, including processing, manufacturing, assembly, packaging, and distribution activities. This is consistent with the definition provided in Section 17-5.1.010 of the Code for "Manufacturing and Production" land use, which includes, in part: "Manufacturing and production firms are involved in the manufacturing, processing, fabrication, packaging, or assembly of goods. Examples include… lumber mills, and other wood products manufacturing."

If the City chooses to proceed with the proposed rezoning despite our strong opposition, we respectfully request that a legally binding, signed, notarized, and recorded acknowledgment of adjacent industrial uses be required. Specifically, developers, property owners, and all tenants —both initial and subsequent—should be required to acknowledge in writing that the subject residential property is located directly across from active, heavy industrial operations. This acknowledgment should be recorded via a deed restriction, covenant, or remonstrance agreement and must be executed prior to any development approvals or residential occupancy.

We urge the City to carefully consider the long-term implications of this rezoning and to uphold the important planning principle of maintaining clear and appropriate separation between industrial and residential land uses.

Thank you for your time and thoughtful consideration.

Sincerely,

James Bobst
Vice President - Corporate Relations
Pacific Fibre Products, Inc.
Lemmons Trucking, Inc.
PO Box 278 / 20 Fibre Way
Longview, WA 98632
O) 360-577-7112; C) 360-430-0749; F) 360-577-1362

communication in error, please advise the sender immediately and delete or destroy the communication you received without copying or disclosing the contents. Thank you.

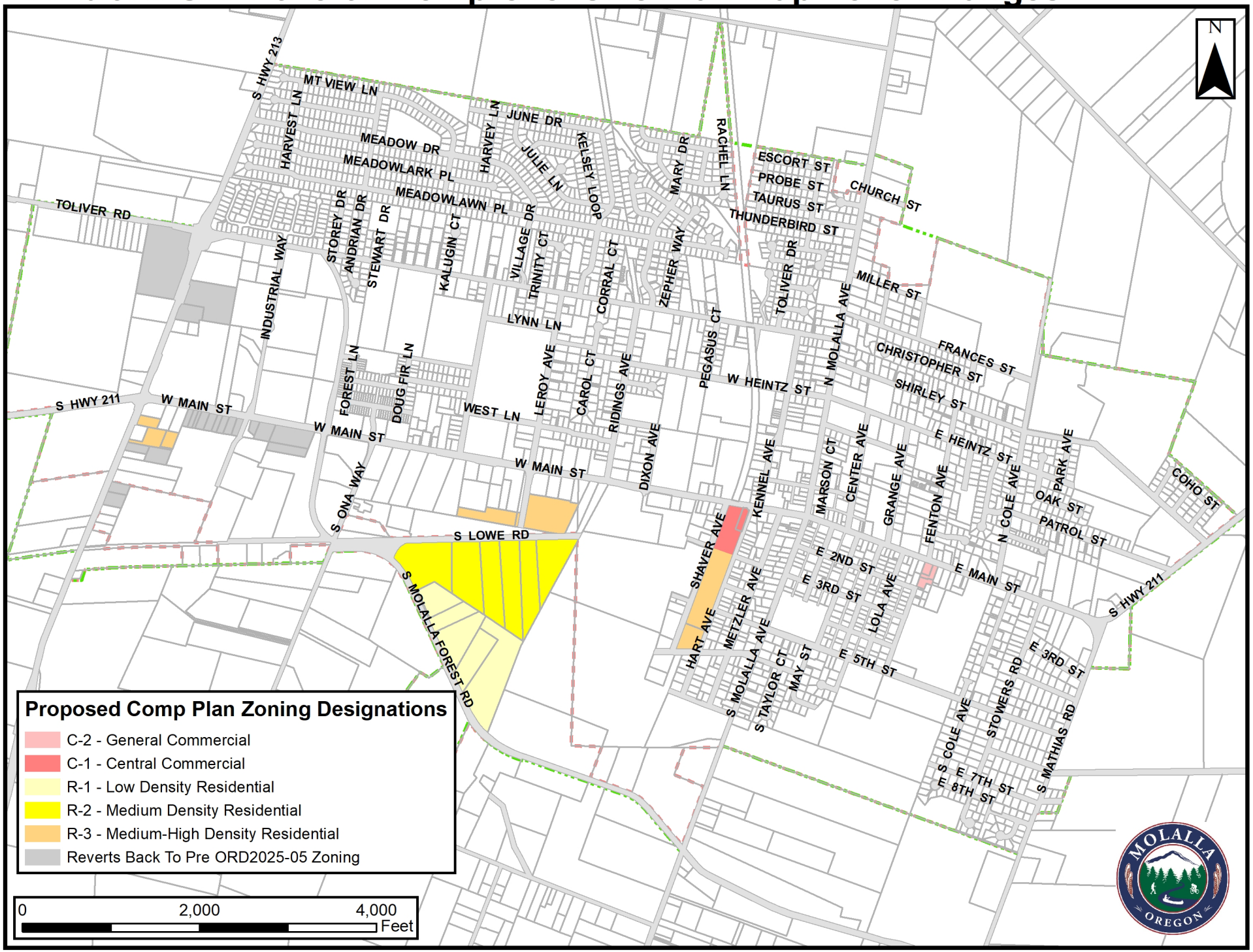
NOTICE OF PUBLIC HEARING: ORD2025-07

On Wednesday, June 25th at 7PM City Council will consider an ordinance to change zoning and comprehensive plan designations for multiple properties in the City and change the review process for Accessory Dwelling Units from a Type II process to a Type I process. The ordinance repeals ORD2025-05 and replaces it with a new ordinance. This effort is in accordance with ORS 197.296, which requires jurisdictions to more efficiently utilize lands within their urban growth boundary before expanding.

The hearing will be held starting at 7:00 PM at the Molalla Civic Center; 315 Kennel Ave, Molalla OR, 97038. You may attend, offer testimony, or seek information at the hearing. Written testimony will be received by the City of Molalla until the day of the hearing and should be addressed or emailed to: City Recorder, Christie Teets, PO Box 248, Molalla OR, 97038, recorder@cityofmolalla.com; note that email is preferred. Please ensure your name and address are included in the written testimony.

A copy of the draft ordinances, resolution, and staff report will be available for inspection at no cost at least seven (7) days prior to the hearing. The documents will also be available at the Molalla Current Urban Growth Boundary page (https://current.cityofmolalla.com/). Copies shall be provided at a reasonable cost upon request.

Exhibit A: ORD2025-07 Comprehensive Plan Map Zone Changes



CITY OF MOLALLA

Staff Report

Agenda Category: PRESENTATIONS, PROCLAMATIONS, CEREMONIES

Agenda Date: Wednesday, July 23, 2025
Submitted by: Mac Corthell, Assistant City Manager
Approved by: Dan Huff, City Manager

SUBJECT:

Water Intake Structure Pre-Design Presentation

FISCAL IMPACT: Five million dollars.

BACKGROUND:

Gordon Munro, PE, of Tetra Tech has come to provide a presentation on the pre-design process and findings for the new Molalla Water Intake structure.

The City of Molalla has been utilizing a temporary water intake structure as its sole-source of potable water collection since the permanent structure was wiped out by the floods of 1996. Since that time, the hydrology of the river has changed to the point where drought conditions sometimes threaten to lower the river below the point of collection for the existing intakes. Additionally, the existing intake is past its capital lifespan and is located in a position that does not allow the City to utilize its full allocation of water rights due to the location of some of those rights.

The City's Water Master Plan identifies this project as a High Priority facility improvement. Pre-design for this project began in July of 2024 and will conclude with Council's adoption of the pre-design report.

ATTACHMENTS:
MOLALLA INTAKE PROJECT.pptx

City of Molalla Intake Project

LOCATION

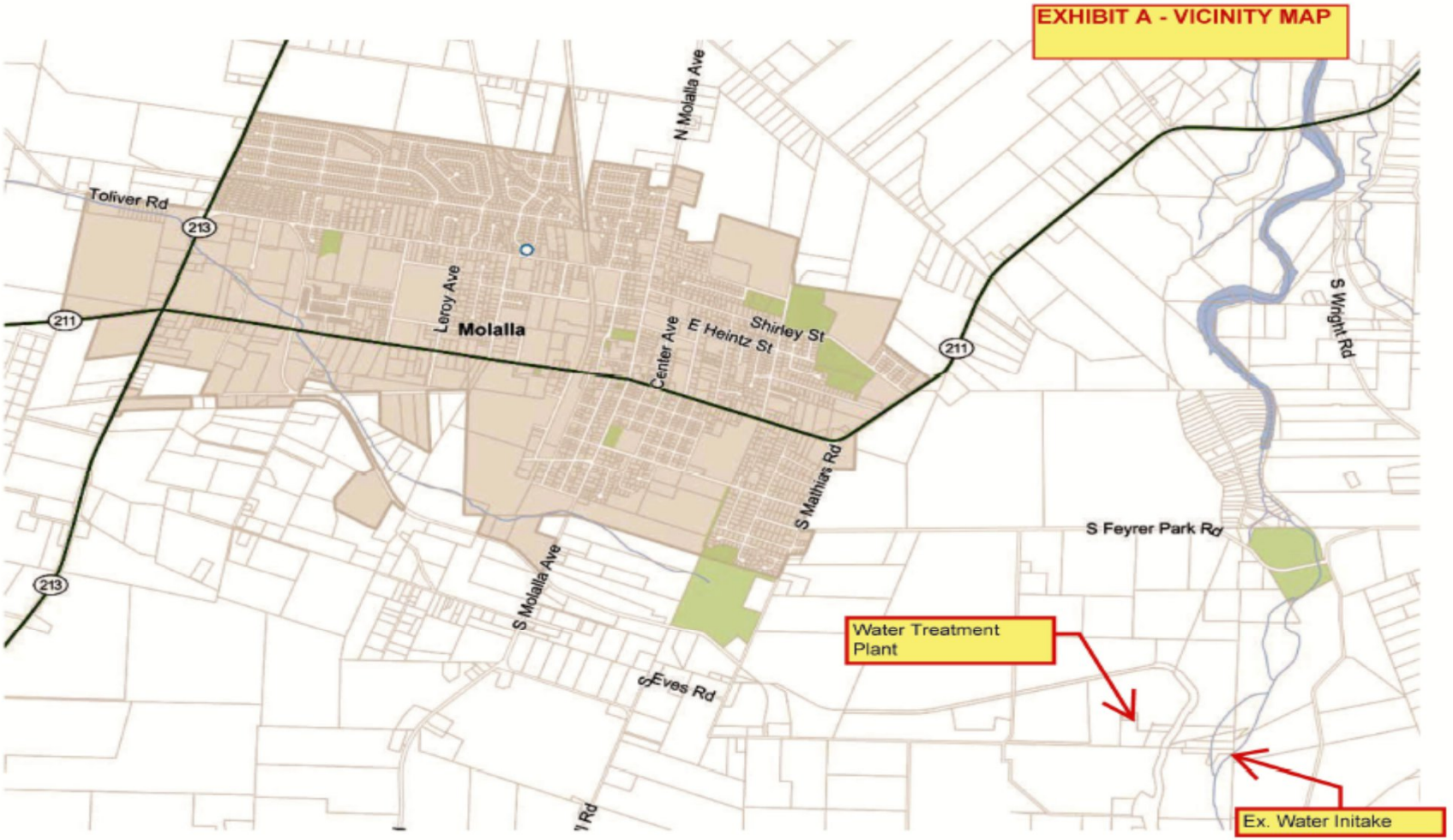


EXHIBIT A - VICINITY MAP
N Molalla Ave
Toliver Rd
213
211
Leroy Ave
Molalla
Center Ave
E Heintz St
Shirley St
S Wright Rd
S Mathias Rd
S Feyrer Park Rd
S Molalla Ave
Eves Rd
Water Treatment Plant
Ex. Water Initake

SITE LOCATION

HISTORY

- 1992 Intake constructed
- 1996 Intake destroyed in flood event
- 1997 Temporary intake constructed

On-going Concerns

- Annual rock and cobble removal
- Low summer flows expose screens
- Vulnerability to flood events

EXISTING SYSTEM

- Intake Screens ~ 4 mgd
- Pipe from screens to pump station ~ 9 to 13 mgd
- Pump Station 2,800 gpm (4 mgd)
- Pipe from pump station to WTP ~ up to 13 mgd
- Water Rights (Molalla & Trout Creek) 7 cfs (4.5 mgd)
- WTP 4 mgd
- Storage Reservoirs 3.2 MG ~ 2.6 ADD
  - Doubles as chlorine contact
  - Future 5 MG plus CT volume

EXISTING SYSTEM – PUMP STATION

EXISTING SYSTEM – PIPE & SCREEN

WATER RIGHTS

- Molalla WR 3 cfs
  - Available year round
- Transferred Trout Creek WR 4 cfs
  - To the extent of Trout Creek Flow
- Availability
  - Nov through June ~ 7 cfs (4.52 mgd)
  - July through Oct ~ 4.94 cfs (3.2 mgd)

ADDITIONAL EVALUATIONS

- Geotechnical
  - Not good for Ranney wells
- Wetlands
  - Some, but not likely impacted
- Environmental
  - Substantial permitting required
  - Endangered species
  - Cultural
  - Water Quality
  - DSL/Corps of Engineers
  - Fish Passage
  - Stormwater
  - 1 to 2 years

RIVER MODELING – TAKE AWAYS

- The 1992 location has a stable pool
- The 1992 location is stabilized upstream
- Sufficient depth and flow at the 1992 location
- Insufficient depth and flow at the 1997 location
- Temporary summertime weir
- Sediment transport

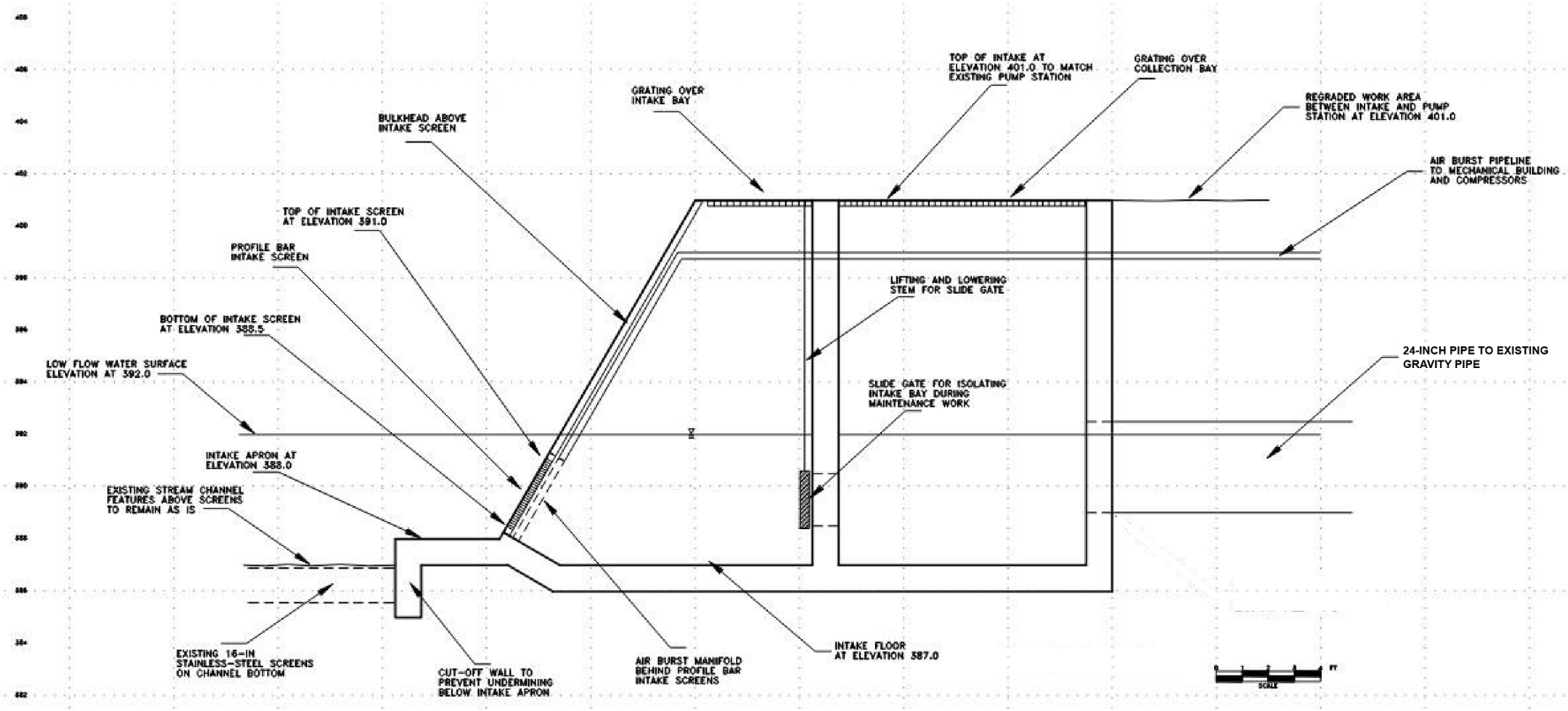
CHARRETTE #1 - ALTERNATIVES

- Review all preliminary data
- Seven alternatives
  - Ranney Well
  - The 1992 infiltration system
  - Five options and combinations at the 1992 & 1997 locations
- Two alternatives selected for further evaluation
  - Fixed sloped screen
  - Tee screen

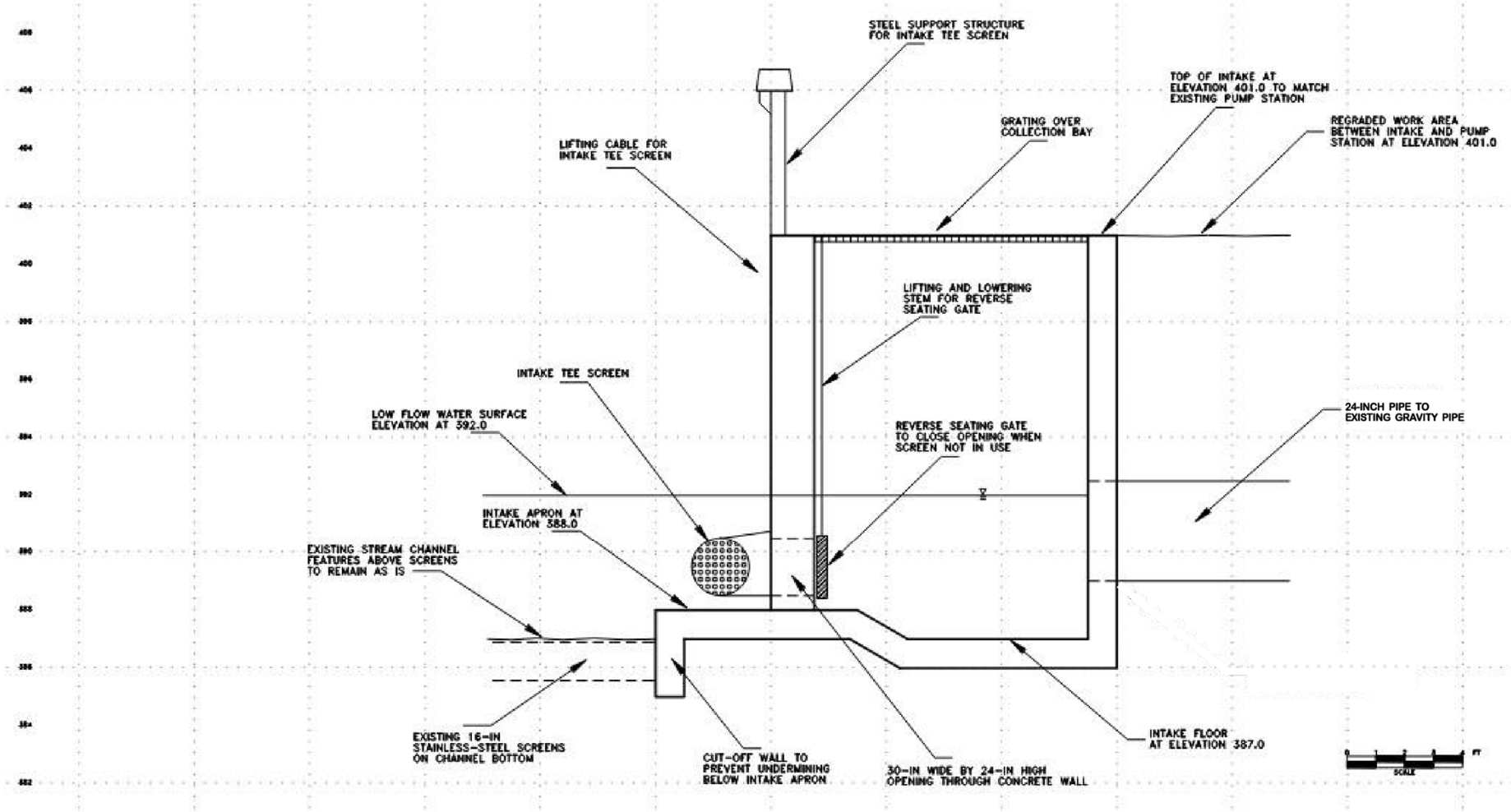
CHARRETTE #2 - EVALUATION

- Both alternatives include
  - 1992 location
  - Keep the 1997 screen
  - hydromodifications
- Fixed slope screen
- Tee Screen
- Both ~ $5m

FIXED SLOPED SCREEN



TEE SCREEN


STEEL SUPPORT STRUCTURE FOR INTAKE TEE SCREEN
TOP OF INTAKE AT ELEVATION 401.0 TO MATCH EXISTING PUMP STATION
GRATING OVER COLLECTION BAY
REGRADED WORK AREA BETWEEN INTAKE AND PUMP STATION AT ELEVATION 401.0
LIFTING CABLE FOR INTAKE TEE SCREEN
LIFTING AND LOWERING STEM FOR REVERSE SEATING GATE
INTAKE TEE SCREEN
LOW FLOW WATER SURFACE ELEVATION AT 592.0
REVERSE SEATING GATE TO CLOSE OPENING WHEN SCREEN NOT IN USE
24-INCH PIPE TO EXISTING GRAVITY PIPE
INTAKE APRON AT ELEVATION 588.0
EXISTING STREAM CHANNEL FEATURES ABOVE SCREENS TO REMAIN AS IS
EXISTING 16-IN STAINLESS-STEEL SCREENS ON CHANNEL BOTTOM
CUT-OFF WALL TO PREVENT UNDERMINING BELOW INTAKE APRON
30-IN WIDE BY 24-IN HIGH OPENING THROUGH CONCRETE WALL
INTAKE FLOOR AT ELEVATION 387.0
SCALE

SCORING

Evaluation Criteria	Average Weight	Sloped Screen (Raw)	Sloped Screen (Weighted)	Tee Screen (Raw)	Tee Screen (Weighted)
Reliability – water availability	3.67	4	14.68	4	14.68
Reliability – tolerance to sediment & debris	3.00	4	12.00	3	9.00
Risk	3.67	4	14.68	3	11.01
O&M requirements – ease of cleaning	3.00	3	9.00	3	9.00
O&M annual cost	2.33	4	9.32	3	6.99
Constructability	2.67	3	8.01	3	8.01
Capital cost	2.33	4	9.32	4	9.32
Impact to the stream hydraulics	2.33	4	9.32	3	6.99
Permitting – environmental requirements	2.67	4	10.68	4	10.68
Permitting – water rights	3.33	5	16.65	5	16.65
Property requirements – purchase or easements	1.67	4	6.68	4	6.68
Schedule	2.67	3	8.01	3	8.01
Seasonal construction issues	2.33	3	6.99	3	6.99
Seasonal construction constraints	2.67	4	10.68	4	10.68
Total Score			**146.02**		**134.69**

Questions & Discussion

CITY OF MOLALLA

Staff Report

Agenda Category: PUBLIC HEARINGS

Agenda Date: Wednesday, July 23, 2025
Submitted by: Dan Zinder, Senior Planner
Approved by: Dan Huff, City Manager

SUBJECT: Ordinance No. 2025-07: Repeals and Replaces Ordinance No. 2025-05, Efficiency Measures; Changing Accessory Dwelling Unit Approvals from a Type II to a Type I Process and Comprehensive Plan Map and Zoning Map Changes (Zinder/Corthell)

RECOMMENDATION/RECOMMENDED MOTION:
Conduct continuation of Public Hearing from June 25, 2025.

BACKGROUND:
This item was presented to City Council on June 25, 2025. The decision was made to table this item during the Public Hearing, and motioned to table until further details could be presented to Council.

ATTACHMENTS:
Ordinance No. 2025-07 Repeal and Replace 2025-05.Public Hearing.pdf

CITY OF MOLALLA

117 N. Molalla Avenue
PO Box 248
Molalla, OR 97038

Staff Report

Agenda Category: Ordinances

Agenda Date: 6/25/2025

From: Dan Zinder, Senior Planner
Approved by: Mac Corthell, Assistant City Manager

SUBJECT: City File DCA01-2025/ORD2025-07 Efficiency Measures; Changing Accessory Dwelling Unit Approvals From A Type II To A Type I Process and Comprehensive Plan Map and Zoning Map Changes. This ordiance repeals and replaces ORD2025-05.

FISCAL IMPACT: None

RECOMMENDATION/RECOMMEND MOTION: Adopt

1. I move the City Council conduct the first reading of ordinance 2025-07, **AN ORDINANCE OF THE CITY OF MOLALLA, OREGON CHANGING ACCESSORY DWELLING UNIT APPROVALS TO A TYPE 1 PROCESS AND COMPREHENSIVE PLAN MAP AND ZONING MAP CHANGES. THIS ORDIANCE REPEALS AND REPLACES ORD2025-05**, by title only.

2. I move the City Council adopt ordinance 2025-07, **AN ORDINANCE OF THE CITY OF MOLALLA, OREGON CHANGING ACCESSORY DWELLING UNIT APPROVALS TO A TYPE 1 PROCESS AND COMPREHENSIVE PLAN MAP AND ZONING MAP CHANGES. THIS ORDIANCE REPEALS AND REPLACES ORD2025-05**, by title only.

If approved by unanimous vote of the City Council:

1. I move the City Council conduct the second reading of ordinance 2025-07, **AN ORDINANCE OF THE CITY OF MOLALLA, OREGON CHANGING ACCESSORY DWELLING UNIT APPROVALS TO A TYPE 1 PROCESS AND COMPREHENSIVE PLAN MAP AND ZONING MAP CHANGES. THIS ORDIANCE REPEALS AND REPLACES ORD2025-05**, by title only.

2. I move the City Council adopt ordinance 2025-07, **AN ORDINANCE OF THE CITY OF MOLALLA, OREGON CHANGING ACCESSORY DWELLING UNIT APPROVALS TO A TYPE 1 PROCESS AND COMPREHENSIVE PLAN MAP AND ZONING MAP CHANGES. THIS ORDIANCE REPEALS AND REPLACES ORD2025-05**, by title only.

BACKGROUND:

This "Efficiency Measures" ordinance is proposed to satisfy the requirements of ORS 197.296; a rule that requires that jurisdictions consider strategies to more efficiently utilize lands within their existing urban growth boundaries prior to expanding their urban growth boundary to meet land/housing needs identified in a Housing Needs Analysis. Efficiency Measures are included as part of Molalla's Urban Growth Boundary sequential review workplan. The City passed an Efficiency Measures ordinance ORD2025-05 on March 26, 2025. This ordinance:

1. Changed ADUs to a ministerial Type I review from a Type II review. This will cut down on permitting time and ease the application process for applicants.

2. Changed comprehensive plan map and, for those properties that are also within the City Limits, zoning map designations. These rezonings aim to reduce industrial land surpluses and address residential and commercial land needs identified in the City's recently adopted Housing Needs Analysis and Economic Opportunities Analysis. For this land rebalancing, 20 properties totaling 26.17 unconstrained acres will be rezoned from Industrial to Commercial and 14 properties totaling 44.73 unconstrained acres will be rezoned from industrial to residential. Additionally, 0.68 acres of commercial land will be rezoned to residential to match surrounding uses.

ORD2025-05 received a challenge from the Oregon Department of Transportation (ODOT) for concerns about Transportation Planning Rule findings that there would be no significant impact to ODOT facilities. Concerns were particularly centered on vacant and underdeveloped properties changing from industrial to commercial zoning, citing that commercial buildout could result in substantially higher trip generation than what is considered in the Molalla Transportation Systems Plan (TSP). Staff ascertained that the challenge would lead to a remand from DLCD and rather than wait to go through that process Staff proactively pursued an ordinance to repeal and replace ORD2025-05.

Molalla Staff worked with ODOT Staff to evaluate potential impact on ODOT facilities. Areas of concern were removed for this replacement ordinance, namely the aforementioned heavy industrial (M-2) to general commercial (C-2) zone changes, and more robust Transportation Planning Rule findings were included to justify a finding of no significant impact for the remaining parcels. A 2.95 acre rezoning from light industrial to central commercial (C-1) remains near Molalla's downtown. As residential parcels from the original ordinance remained

in the replacement ordinance, Efficiency Measures requirements are satisfied by the proposed ORD2025-07 comprehensive plan map and zoning changes. Analysis on how these proposed rezoning efforts impact surpluses and land needs is available in Attachment A Findings of Fact.

Attachment A – Findings of Fact for ORD2025-07
Attachment B – ORD2025-07
- **Exhibit A** – Subject Parcels Summary of Changes
- **Exhibit B** – Proposed Comprehensive Plan Map Changes
- **Exhibit C** – Proposed Zoning Map Changes
- **Exhibit D** – Proposed Development Code Text Edits

EXHIBIT A – FINDINGS OF FACT FOR ORD2025-07

MMC 17-4.6.030 Annexation & Zone Change Approval Criteria
Planning Commission review and recommendation, and City Council approval, of an ordinance amending the Zoning Map, Development Code, or Comprehensive Plan shall be based on all of the following criteria:

(A) If the proposal involves an amendment to the Comprehensive Plan, the amendment must be consistent with the Statewide Planning Goals and relevant Oregon Administrative Rules;

Findings:
The proposal does amend the Comprehensive Plan by amending the Comprehensive Plan Map and it also amends the zoning map and development code.

Applicable Statewide Planning Goals are:

Goal 1: Citizen Participation;
Goal 2: Land Use Planning;
Goal 9: Economic Development;
Goal 10: Housing;
Goal 14: Urbanization.

Findings for Goal 1: Citizen Participation

Public Engagement for ORD2025-05 and 2025-07 prior to the June 25th City Council Hearing included:

1. Discussion of ORD2025-05 with the Molalla Planning Commission on February 5, 2025.

2. Courtesy notices to potentially affected properties on February 13th to ensure they arrived in advance of the February 26th Council work session. These letters advised owners of proposed zoning changes and opportunities to learn more and provide feedback. Staff received several calls from property owners, many of whom just wanted clarification on what was happening. Notably, Staff received substantial owner feedback from property owners near Commercial PKWY that changing zoning in these areas to residential was not desirable. This feedback led to Staff to recommend the removal of that area from consideration. Council agreed and those areas were removed from the final proposal.

3. 35-day notice to DLCD through the PAPA is required prior to the scheduled hearing. Staff Notified DLCD through their Post-acknowledgement plan amendments (PAPA) portal on February 20th, 2025, missing this requirement by one day.

4. Measure 56 notice for ORD2025-05 was mailed to all parties affected by the rezoning on March 4th, 2025 exceeding the required 20 day deadline per ORS 227.186.

5. Newspaper notice was published on March 5, 2025 exceeding the 10-day requirement for Type IV decisions per MMC 17-4.1.050 C, 4.

6. Web notice was posted on March 3, 2025 exceeding the 10-day requirement for Type IV decisions per MMC 17-4.1.050 C, 4.

7. The ordinance and staff report were made available to the public at least 7 days prior to the March 26th hearing.

8. PAPA and Measure 56 were re-noticed for the repeal and replace ordinance (ORD2025-07), prior to the June 25th Council meeting and the 35 day and 20 day guidelines respectively.

9. Ordinance and staff report for repeal and replace ORD2025-07 were made available to the public at least 7 days prior to the June 25th hearing.

Consistency with Goal 1 is met.

Findings for Goal 2: Land Use Planning

Goal 2's headline object is: *"To establish a land use planning process and policy framework as a basis for all decision and actions related to use of land and to assure an adequate factual base for such decisions and actions."*

The proposed rezoning actions within this ordinance are directed based on the findings from the City's adopted Housing Needs Analysis and Economic Opportunities Analysis and their respective guidance on 20-year land supply. The proposed rezonings utilize surpluses within the industrial zones to meet commercial and residential land needs with remaining land balances to be addressed in a forthcoming Urban Growth Boundary Amendment.

The proposed change of Accessory Dwelling Units approvals from a Type II to a Type I process is advised in our adopted Housing Production Strategies document.

Consistency with Goal 2 is met.

Findings for Goal 9: Economic Development

Findings for Goal 10: Housing

Because surplus industrial lands are proposed for rezoning for both commercial and residential land categories Staff choses to evaluate these two goals together to holistically account for resulting land balances. Areas selected for rezoning were either found to be either vacant or partially vacant in the City's Employment Buildable Lands Inventory. Adjacent, non-conforming, developed parcels that were sandwiched between properties selected for rezoning were also selected for rezoning.

Goal 9 requires that jurisdictions *"provide at least an adequate supply of site of suitable sizes, types, locations, and service levels for a variety of industrial and commercial uses."* The City's adopted Economic Opportunities Analysis (EOA) shows that Molalla has a deficit of 15 acres of commercial land. Conversely, it showed that the City has a 97-acre surplus of industrial lands. Figure 7.8 from the EOA further shows that the industrial surplus is particularly in smaller industrial sites between 0-4.9 acres with a surplus of 19 sites between 0-1 unconstrained acres and a surplus of 21 sites for parcels between 1-4.9 unconstrained acres.

The City's proposed zone changes add 2.95 acres of unconstrained of undeveloped land to the C-1 Central Commercial zone.

Table 1: Balancing of Employment Lands Sites

	Commercial		Industrial	
Acreage	Needed Sites	Added Sites	Surplus Sites	Converted to Commercial
1-4.9 ac	5	1	21	1

There are other opportunities to rezone underutilized industrial lands within the existing urban growth boundary to commercial, however as commercial lands typically have a greater trip generation impact than industrial lands, additional transportation study and, potentially, Transportation Systems Plan updates, are needed to determine impacts to transportation systems and appropriately respond.

The City's 2023 adopted Housing Needs Analysis and Buildable Lands Inventory found deficits for all housing density types within Molalla's existing urban growth boundary and an overall deficit of 1,576 units within the 2022-2042 20-year planning period that cannot be accounted for by the City's existing available residential lands within the urban growth boundary. The proposed rezonings to residential draw on the surpluses of industrial lands to alleviate some of these deficits. The proposed rezonings would add 45.41 unconstrained acres of residential land, 43.57 of which are considered vacant or partially vacant. Further broken down, the rezonings would add:

- 7.15 new acres of R-3 zoned land, which can be developed at 8-24 units per acre.
- 27.07 new acres of R-2 zoned land, which can be developed at 6-12 units per acre.

- 11.35 new acres of R-1 zoned land, 9.51 ac of which are vacant or partially vacant, which can be developed at 4-8 units per acre.

All proposed residential land would be converted from existing industrial land, with the exception of two parcels totaling 0.68 ac from commercial zoning and rezones to R-3 to match surrounding high residential land uses. Table 2 shows the resultant balance of industrial lands once the residential lands are rezoned, continued from Table 1:

Table 2: Balancing of Residential Lands Sites

	Industrial	
Acreage	Surplus Sites	Converted to Residential
1-4.9 ac	20	10
5-9.9 ac	(-2)	1

This proposal takes a 5-9 ac parcel from the industrial inventory, adding to the need for larger industrial parcels. This parcel was selected because it was contiguous with other parcels selected for rezoning to residential. As this project is part of the City's sequential review workplan for an urban growth boundary amendment, the City anticipates accommodating for lost needed industrial site during the urban growth boundary expansion process.

The City's Housing needs analysis anticipated 1,098 low density units, 499 medium density units, and 399 high density units within the 20-year planning period. When accounting for the 287 multifamily units completed in Molalla since 2022, the proposed rezonings would bridge the gap on needed available R-3 land. Land would still be needed to accommodate outstanding R-1 and R-2 housing needs, to be accounted for through the urban growth boundary amendment.

Through this amendment, the City also proposes changing the approval process for accessory dwelling units (ADU) from a Type II "Administrative Review With Notice" process to a Type I "Staff Review and Zoning Checklist" process. This is consistent with OR House Bill 2001's allowance of ADUs by right on properties that can accommodate a single family dwelling unit. Additionally, the City's forthcoming Housing Production Strategies (HPS) document shows a substantial need for more affordable housing types and removing administrative red tape around ADUs is a step in making them more viable for development. These units, if developed more widespread, could account for some of the gap in available housing for 80% of the AMI and below, as identified in the HPS.

Findings for Goal 14: Urbanization

This ordinance is a component of Molalla's sequential review workplan for an urban growth boundary amendment. Rezoning existing surplus lands within the City's existing urban growth boundary will reduce the land need required for the ultimate urban growth boundary expansion. The city has addressed a portion of the housing need and commercial land need through this ordinance.

(B) The proposal must be consistent with the Comprehensive Plan (the Comprehensive Plan may be amended concurrently with proposed changes in zoning);

Findings:
The proposal amends the Comprehensive Plan Map concurrently with zoning map changes. Molalla Comprehensive Plan Goals 1, 2, 9, 10, and 14 are discussed under Statewide Planning Goal Findings. Specific to our Comprehensive Plan, the proposed rezonings provide greater alignment with the following policies:

Commercial Development Policy 1:

The City shall designate and adequate supply of suitable sites for commercial use within the Molalla UGB.

Findings: Per the forthcoming EOA, the proposed rezonings move the city closer to its commercial land supply targets for parcels between 1-4.9 acres.

Commercial Development Policy 9:

Major commercial activities shall be concentrated in areas receiving a high volume of traffic in order to minimize auto use. Commercial land shall be designated in a manner which locates high volume trade activities near major roads, groups a variety of medical facilities and services together, preferably near hospitals, and groups professional and governmental facilities near the downtown area and other major commercial locations.

Findings: Proposed rezoning to commercial occurs along OR-211 and in high volume areas. The proposed rezoning brings the subject parcels to be changed to commercial into greater conformity with this policy.

Industrial Policy 1:

The City shall establish and maintain a competitive short-term and long-term supply of employment land, in readily developable sites.

Findings: The City's proposed rezoning efforts from industrial primarily draw from surpluses in industrial parcels between 0-4.9 acres. One parcel with more than 5 acres or more of buildable land is proposed for rezoning. The City retains three industrial parcels between 5-9.9 acres, leaving an adequate short-term supply. The City anticipates rejuvenating the long term deficit for industrial parcels of this size through a forthcoming urban growth boundary amendment.

Housing Policy 5:

As set forth in the City's Housing Needs Analysis, a variety of housing types shall be encouraged throughout the planning area for households of all incomes levels, ages and living patterns. Such housing should include but not be limited to:

5.1. large and small lot single-family residences;
5.2. accessory dwellings;
5.3. duplexes, triplexes & quadplexes;
5.4. multiple-family housing (including for-rent apartments and for-sale condominiums);
5.5. attached single-family residences; and
5.6. manufactured dwellings in parks and on individual lots.

Findings: The proposed change for Accessory Dwelling Unit approvals from Type II to Type I encourages this type of housing development and is consistent with this policy.

(C) The City Council must find the proposal to be in the public interest with regard to community conditions; the proposal either responds to changes in the community, or it corrects a mistake or inconsistency in the subject plan or code;

Findings:
This proposal responds to a change in community conditions. Findings from the City's Housing Needs Analysis showed that as of 2022 the City had developed the vast majority of its residential land and has a shortage of over 1500 units in its 20-year land supply. Likewise, our economic opportunities analysis showed 20-year shortages in commercial lands and substantial surpluses of smaller industrial parcels. The proposed changes to the Comprehensive Plan and zoning map help balance those surpluses towards areas where the City has shortages.

For changing accessory dwelling unit approvals from Type II to Type I, policy 5 from our Goal 10 comprehensive plan policies advise that this housing type should be encouraged. As the process for approvals is not discretionary and ADUs are allowed by right by state law on any property where a single-family dwelling unit is built, reducing the processing burden for applications is only appropriate.

This criterion is met.

(D) The amendment must conform to Section 17-4.6.050 Transportation Planning Rule Compliance

Findings:
The proposed rezoning includes "land rebalance" rezonings and "courtesy rezonings." The land rebalance rezonings focus on undeveloped and partially developed parcels to address land deficiencies in residential and commercial lands and surpluses in industrial lands as found in the City's recently adopted Housing Needs Analysis and Economic Opportunities Analysis reports. The "courtesy rezonings" change zoning on some already developed parcels that have become

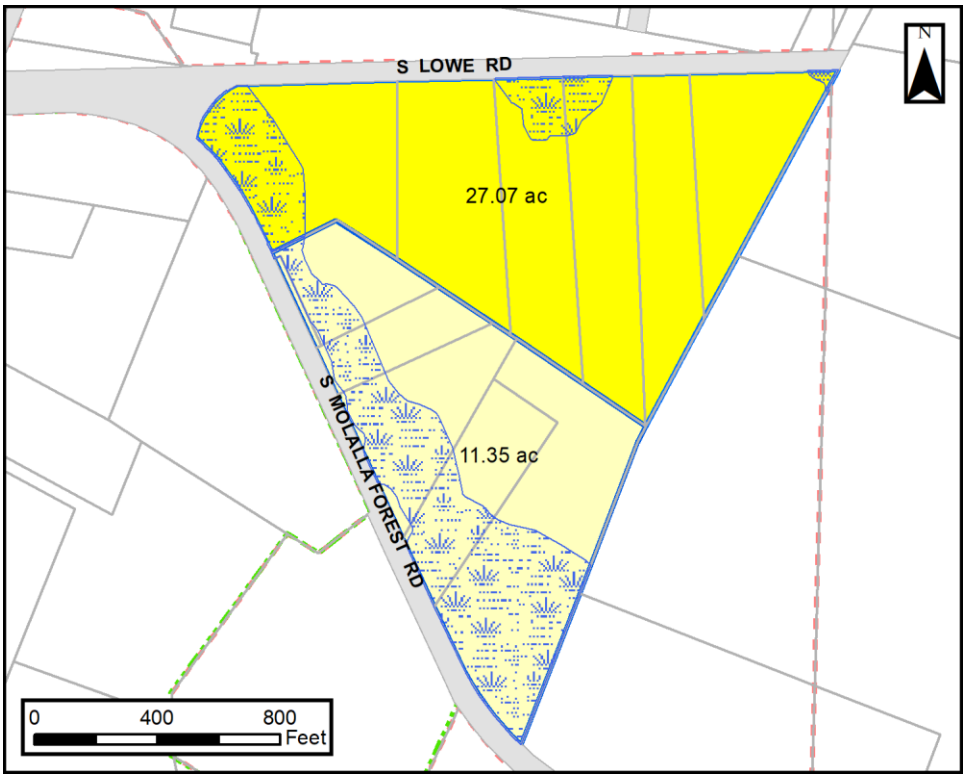
non-conforming uses in the current zone. Transportation Rule Compliance is addressed separately for each of these situations below.

Land Rebalance Rezonings

Staff evaluated trip generation for undeveloped and partially developed lands proposed for rezoning in collaboration with ODOT staff to determine whether significant impacts to transportation facilities would result from the proposal. Land rebalance rezonings are primarily consolidated in two areas; an area south of S Lowe RD and east of Ona WY and another area south of W Main ST and between Shaver Ave and Hart Ave. One undeveloped parcel near the OR-211 and OR-213 intersection is also included. For these areas, Staff projected buildout scenarios that would create near the highest volume of trip generation allowed under zoning code for both the current zoning and after the proposed rezoning.

These buildout scenarios are shown below. All trip generation figures are based on the City's adopted SDC methodology. The trip generation numbers within are derived from the ITE, Trip Generation Manual, 11th edition.

Area 1 – Parcels South of S Lowe RD



ORD2025-07 changes comp plan designations and zoning, as applicable, for these parcels is from M-2 Heavy Industrial to R-1 Low Density Residential and R-2 Medium Density Residential. These scenarios assume that each zone is built out as one consistent campus, maximizing potential uses. Notably, large

truck traffic decreases substantially with the change from heavy industrial to residential in these scenarios and a PCE comparison may be important to understand the difference of impacts for this area.

Proposed Zoning

R-1 – Low-Density Residential Scenario: 11.35 acres of unconstrained land built out at 8 units/acre with 25% of land assumed for public facilities and parks.

Buildout	68 Single Family, Detached Units (210)
Peak Hour Primary Trip ends/Dwelling Unit	Single Family, Detached Units: 0.94
Peak Hour Trip Generation	64

R-2 – Medium High Density Residential Scenario: 27.07 acres of unconstrained land built out at 12 units/acre with 25% of land assumed for public facilities and parks.

Buildout	140 Single Family, Detached Units (210) 60 Low-Rise Apartment Units (220) 44 Townhouses (215)
Peak Hour Primary Trip ends/Dwelling Unit	Single Family, Detached Units: 0.94 Low-Rise Apartment Units: 0.51 Townhouses: 0.57
Peak Hour Trip Generation	132+31+25=188

Current Zoning

M-2 – Heavy Industrial Scenario: Properties are developed together as one site/campus spanning 38.42 acres.

Buildout	281,000 SF Manufacturing (140) 200,000 SF Warehousing (150)

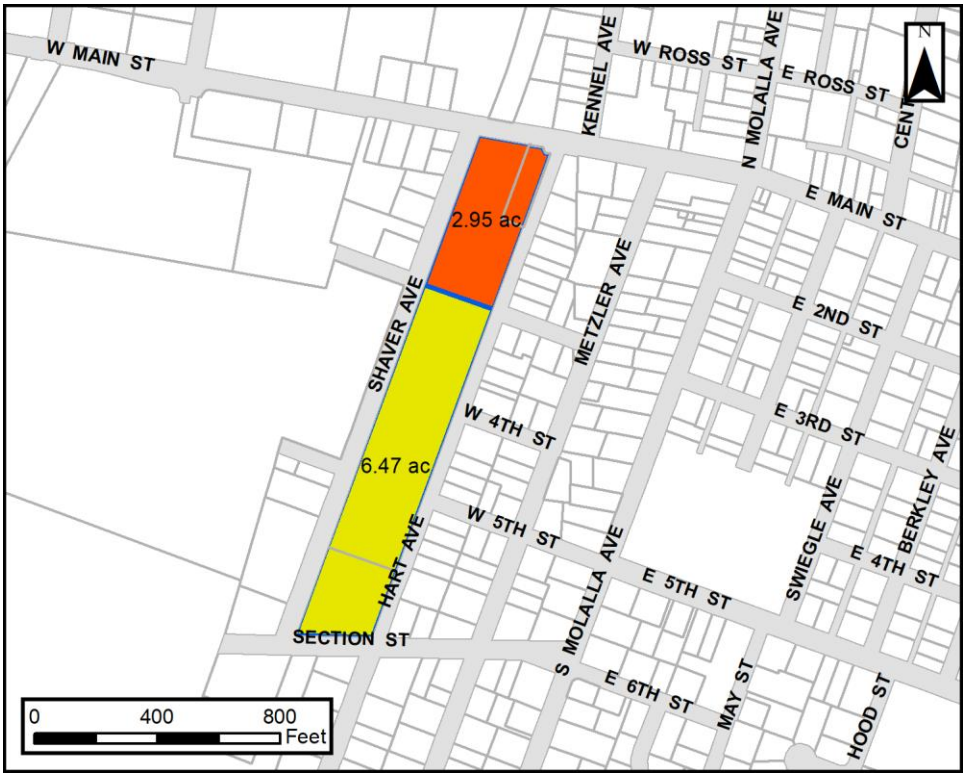
Peak Hour Primary Trip end/1000 SF	Manufacturing: 0.74 Warehousing: 0.18
Peak Hour Trip Generation	208+36 = 244

Total Trip Generation Before Zone Change: 244 Peak Hour Weekday Trips

Total Trip Generation After Zone Change: 252 Peak Hour Weekday Trips, roughly increase by 8 trips

In this scenario planning review, there is negligible impact on projected maximum trip generation and therefore a determination of no significant impact on transportation facilities is appropriate.

Area 2 – Parcels South of OR-211 Between Hart Ave and Shaver Ave



ORD2025-07 changes zoning and comp plan designations for these parcels is from M-1 Light Industrial to C-1 Central Commercial for portions north of W 3rd ST and R-3 Medium-High Density Residential for portions south of W 3rd ST. These scenarios assume that each zone is built out as one consistent campus, maximizing potential uses. While some large truck trips would be associated with the proposed car lot in the light industrial scenario, change in heavy truck traffic can be considered negligible in these scenarios.

Proposed Zoning

C-1 – Central Commercial Scenario: 2.95 acres of unconstrained land.

Buildout	30,000 SF Movie Theater (445)
Peak Hour Primary Trip end/1000 SF	Movie Theater: 6.17
Peak Hour Trip Generation	185

R-3 – Medium High Density Residential Scenario: 6.47 acres of unconstrained land built out at 24 units/acre with 25% of land assumed for public facilities and parks.

Buildout	60 Low-Rise Apartment Units (220) 56 Townhouses (231)
Peak Hour Primary Trip ends/Dwelling Unit	Low-Rise Apartment Units: 0.51 Townhouses: 0.57
Peak Hour Trip Generation	63

Current Zoning

M-1 – Light Industrial Scenario: 9.42 Acres

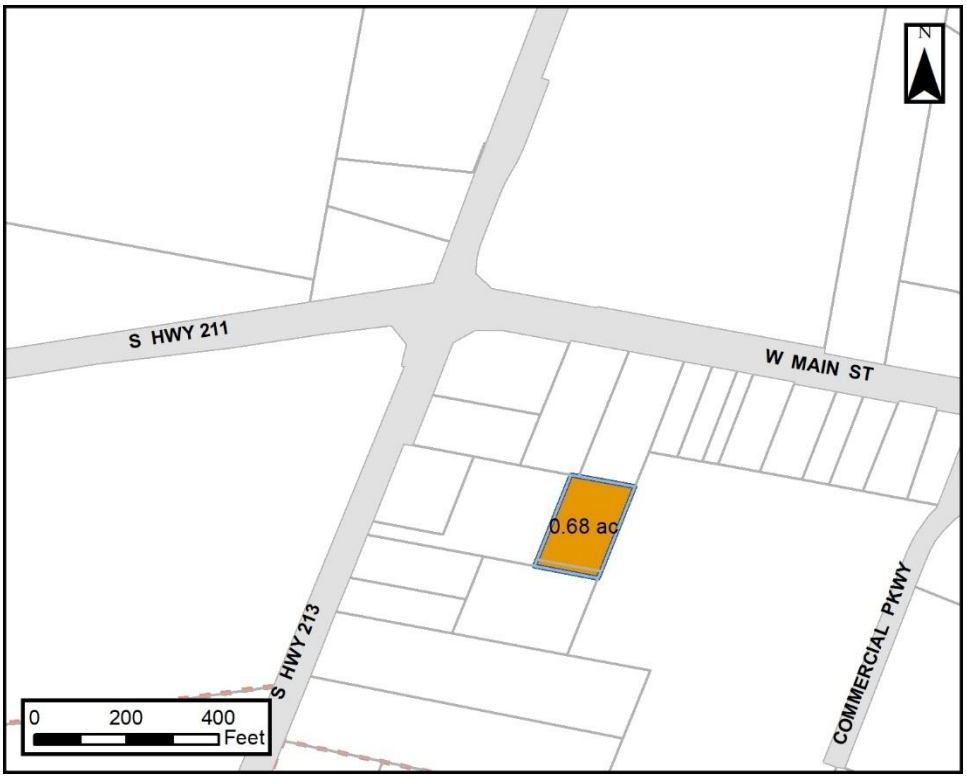
Buildout	30,000 SF Movie Theater (444) 23,000 SF Car Sales Lot (841)
Peak Hour Primary Trip end/1000 SF	Movie Theater: 6.17 Auto Sales: 3.75
Peak Hour Trip Generation	271

Total Trip Generation Before Zone Change: 271 Peak Hour Weekday Trips

Total Trip Generation After Zone Change: 248 Peak Hour Weekday Trips, roughly decrease by 20 trips

In this scenario planning review, there is negligible impact on projected maximum trip generation and therefore a determination of no significant impact on transportation facilities is appropriate.

Parcel Near OR-211/OR-213 Intersection



ORD2025-07 changes zoning and comp plan designations for this parcel from C-2 General Commercial to R-3 Medium-High Density Residential. This parcel is isolated from the highway, adjacent to an existing apartment complex, and unlikely to develop as commercial.

0.68 ac Portion:

	Proposed Zoning: **R-3 – Medium High Density Residential Scenario**
Buildout	12 Dwelling Unit Apartment Complex (220)
Peak Hour Primary Trip ends/Dwelling Unit	Low-Rise Apartment: 0.51
Peak Hour Trip Generation	6

	Current Zoning: **C-2 – General Commercial Scenario**
Buildout	5,000 SF Office (750)
Peak Hour Primary Trip end/1000 SF	Office: 1.3
Peak Hour Trip Generation	7

Total Trip Generation Before Zone Change: 7 Peak Hour Weekday Trips

Total Trip Generation After Zone Change: 6 Peak Hour Weekday Trips, roughly decrease by 1 trip.

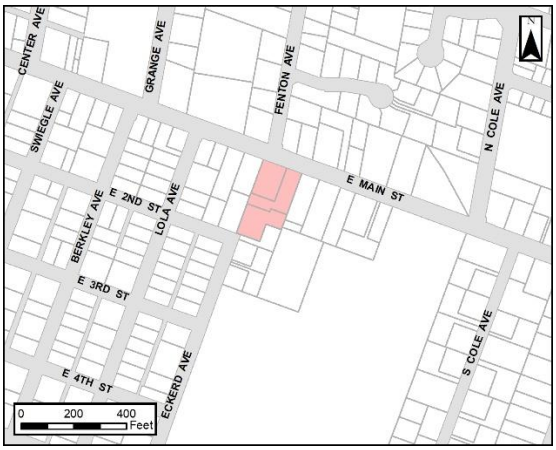
In this scenario planning review, there is negligible impact on projected maximum trip generation and therefore a determination of no significant impact on transportation facilities is appropriate.

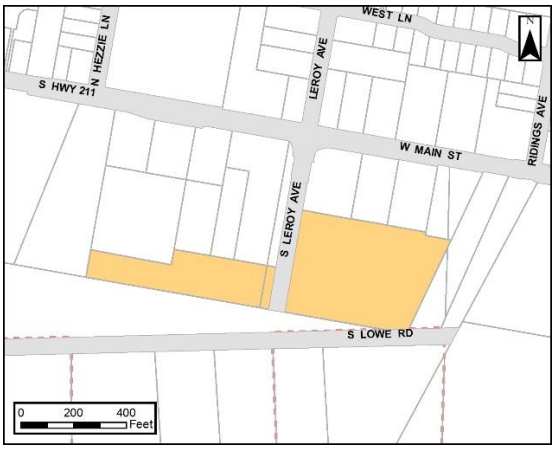
Courtesy Rezonings

Included in this ordinance is the rezoning of eight parcels totaling 9.62 acres for properties where the existing, built use does not match zoning. These rezoning efforts include:

- Three parcels, totaling 0.97 acres changed from R-2 Medium Density Residential zoning to C-2 General Commercial zoning. The parcels comprise the building and parking area for an existing commercial bed and breakfast known as the Prairie House Inn.
- Five parcels totaling 8.65 acres changed from C-2 General Commercial zoning to R-3 Medium-High Density Residential zoning. These parcels are the current location Colima and Cascade Place Apartments.

Prairie House Inn Parcels **Cascade Place Apartments Parcels**





Colima Apartments Parcels

These parcels are already developed as uses that do not match the zoning and their impact was considered in design review and, thus, by the current Transportation Systems Plan. Further, if these properties were to redevelop, rezoning the bulk of the land from C-2 to R-3 reduces a maximum trip count at highest impact and no significant impact to transportation facilities can be determined.

This planning review meets the requirements of Section 17-4.6.050 Transportation Planning Rule Compliance as defined in OAR 660-012-0060 for plan and land use regulation amendments. The review concludes no significant effect to the transportation system and consistency with the current adopted Transportation System Plan (2018).

CITY OF MOLALLA

Staff Report

Agenda Category: ORDINANCES AND RESOLUTIONS

Agenda Date: Wednesday, July 23, 2025
Submitted by: Dan Zinder, Senior Planner
Approved by: Dan Huff, City Manager

SUBJECT: Ordinance No. 2025-07: Repeals and Replaces Ordinance No. 2025-05, Efficiency Measures; Changing Accessory Dwelling Unit Approvals from a Type II to a Type I Process and Comprehensive Plan Map and Zoning Map Changes (Zinder/Corthell)

RECOMMENDATION/RECOMMENDED MOTION:
Conduct the First Reading of Ordinance No. 2025-07.

I move to adopt Ordinance NO. 2025-07, Repealing and Replacing Ordinance No. 2025-05, Efficiency Measures; Changing Accessory Dwelling Unit Approvals from a Type II to Type I Process and Comprehensive Plan Map and Zoning Map Changes.

ATTACHMENTS:
Ordinance No. 2025-07 Repeal and Replace 2025-05.Ordinance Reading

ORDINANCE NO. 2025-07

AN ORDINANCE OF THE CITY OF MOLALLA, OREGON.

REPEALING AND REPLACING ORDINANCE NO. 2025-05, EFFICIENCY MEASURES; CHANGING ACCESSORY DWELLING UNIT APPROVALS FROM A TYPE II TO A TYPE I PROCESS AND COMPREHENSIVE PLAN MAP AND ZONING MAP CHANGES.

WHEREAS, ORS 197.296 requires that jurisdictions consider strategies to more efficiently utilize lands within their existing urban growth boundaries prior to expanding their urban growth boundary

WHEREAS, OR House Bill 2001 allows an accessory dwelling unit by right on any property that has an existing single family dwelling

WHEREAS, Molalla's sequential review workplan for its urban growth boundary requires that the City adopt efficiency measures by March of 2025

WHEREAS, The City's Housing Needs analysis and Economic Opportunities Analysis identified areas of surplus of industrial land and deficits in commercial and residential lands in the City's existing land supply

WHEREAS, The City's forthcoming Housing Production Strategy identified changing accessory dwelling unit approvals to a Type I procedure as a priority

Now, Therefore, the City of Molalla ordains:

Section 1. To amend the Comprehensive Plan Map zoning in accordance with Exhibits A and B attached hereto and incorporated herein by reference. And to adopt the findings in the staff report applicable to the Comprehensive Plan Map amendment. This Ordinance Repeals and Replaces Comprehensive Plan Map changes from ORD2025-05.

Section 2: To amend the Zoning Map in accordance with Exhibits A and C attached hereto and incorporated herein by reference. And to adopt the findings in the staff report applicable to the Zoning Map amendment. This Ordinance Repeals and Replaces Zoning Map changes from ORD2025-05.

Section 3: To amend the Molalla Development Code in accordance with Exhibit D attached hereto and incorporated herein by reference. And to adopt the findings in the staff

report applicable to the Development Code amendment. This Ordinance Repeals and Replaces Development Code changes from ORD2025-05.

Section 4. Effective Date. This Ordinance shall take effect 30 days after adoption and approval by the mayor.

The First Reading was held on July 23, 2025 and moved to a Second Reading by _____ vote of the City Council.

The Second Reading was held on _____ and adopted by the City Council on _____.

Signed this ____ day of _____ 2025.

_____
Scott Keyser, Mayor

ATTEST:

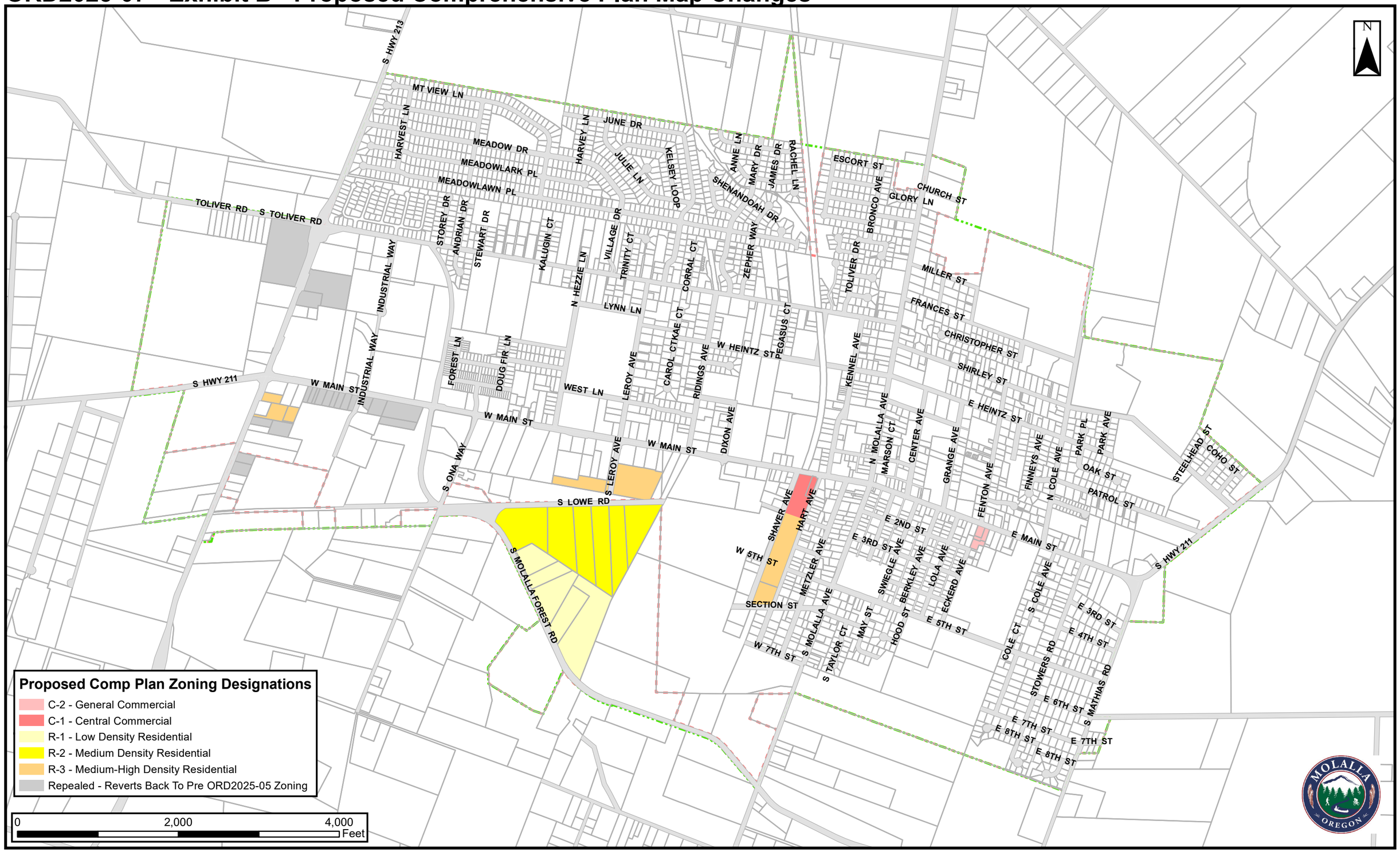
_____

Christie Teets, CMC
City Recorder

Exhibit A: ORD05-2025 Subject Parcels

Property Address	Taxlot Number	Current Plan Zone	Proposed Plan Zone	Current Zoning	Proposed Zoning	Acreage	Constrained Acres	Buildable Acres	Vacant/Partially Vacant	Notes
524 E MAIN ST	52E09CD01406	R-2 Medium Density Residential	C-2 General Commercial	R-2 Medium Density Residential	C-2 General Commercial	0.3		0.3	N	Courtesy
No Address	52E09CD01407	R-2 Medium Density Residential	C-2 General Commercial	R-2 Medium Density Residential	C-2 General Commercial	0.33		0.33	N	Courtesy
No Address	52E09CD01408	R-2 Medium Density Residential	C-2 General Commercial	R-2 Medium Density Residential	C-2 General Commercial	0.34		0.34	N	Courtesy
No Address	52E08C 04601	C-2 General Commercial	R-3 Medium-High Density Residential	C-2 General Commercial	R-3 Medium-High Density Residential	0.13		0.13	N	Courtesy
No Address	52E07D 02300	C-2 General Commercial	R-3 Medium-High Density Residential	C-2 General Commercial	R-3 Medium-High Density Residential	0.59		0.59	N	Courtesy
13001 S CROMPTONS LN	52E07D 02402	C-2 General Commercial	R-3 Medium-High Density Residential	C-2 General Commercial	R-3 Medium-High Density Residential	1.14		1.14	N	Courtesy
200 S LEROY AVE	52E08C 04600	C-2 General Commercial	R-3 Medium-High Density Residential	C-2 General Commercial	R-3 Medium-High Density Residential	2.07		2.07	N	Courtesy
201 S LEROY AVE	52E08C 04700	C-2 General Commercial	R-3 Medium-High Density Residential	C-2 General Commercial	R-3 Medium-High Density Residential	4.68		4.68	N	Courtesy
304 W MAIN ST	52E08DD09300	M-1 Light industrial	C-1 Central Commercial	M-1 Light industrial	C-1 Central Commercial	0.45		0.45	Y	
13225 S MOLALLA FOREST RD	52E08C 03300	M-2 Heavy Industrial	R-1 Low Density Residential	RRFF5 - Rural Residential	N/A - Comp Plan Only	2.75	0.86	1.89	Y	
13353 S MOLALLA FOREST RD	52E17 00100	M-2 Heavy Industrial	R-1 Low Density Residential	RRFF5 - Rural Residential	N/A - Comp Plan Only	3.45	1.54	1.91	Y	
No Address	52E08C 03400	M-2 Heavy Industrial	R-1 Low Density Residential	RRFF5 - Rural Residential	N/A - Comp Plan Only	4	2.08	1.92	Y	
13355 S MOLALLA FOREST RD	52E17 00101	M-2 Heavy Industrial	R-1 Low Density Residential	RRFF5 - Rural Residential	N/A - Comp Plan Only	9	4.79	4.21	Y	
13566 S LOWE RD	52E08C 03800	M-2 Heavy Industrial	R-2 Medium Density Residential	RRFF5 - Rural Residential	N/A - Comp Plan Only	4.15	0.8	3.35	Y	
13526 S LOWE RD	52E08C 03801	M-2 Heavy Industrial	R-2 Medium Density Residential	RRFF5 - Rural Residential	N/A - Comp Plan Only	4.5		4.5	Y	
13434 S LOWE RD	52E08C 03600	M-2 Heavy Industrial	R-2 Medium Density Residential	M-2 Heavy Industrial	R-2 Medium Density Residential	4.74	0.75	3.99	Y	
13500 S LOWE RD	52E08C 03700	M-2 Heavy Industrial	R-2 Medium Density Residential	M-2 Heavy Industrial	R-2 Medium Density Residential	5.29	0.44	4.85	Y	
13350 S LOWE RD	52E08C 03500	M-2 Heavy Industrial	R-2 Medium Density Residential	M-2 Heavy Industrial	R-2 Medium Density Residential	5.74		5.74	Y	
13300 S LOWE RD	52E08C 03200	M-2 Heavy Industrial	R-2 Medium Density Residential	RRFF5 - Rural Residential	N/A - Comp Plan Only	6.45	2.39	4.06	Y	
No Address	52E07D 02404	C-2 General Commercial	R-3 Medium-High Density Residential	C-2 General Commercial	R-3 Medium-High Density Residential	0.05		0.05	Y	
12763 S CROMPTONS LN	52E07D 02401	C-2 General Commercial	R-3 Medium-High Density Residential	C-2 General Commercial	R-3 Medium-High Density Residential	0.63		0.63	Y	
555 SHAVER AVE	52E08DD09400	M-1 Light industrial	R-3 Medium-High Density Residential	M-1 Light industrial	R-3 Medium-High Density Residential	7.75		7.75	Y	Area north of W 3rd ST to be zoned as C-1 and area south of W 3rd ST to be zoned as R-3 Medium-High residential
430 HART AVE	52E08DD09401	M-1 Light industrial	Split R-3 Medium-High Density Residential and C-1 Central Commercial	M-1 Light industrial	Split R-3 Medium-High Density Residential and C-1 Central Commercial	1.49		1.49	Y	

ORD2025-07 - Exhibit B - Proposed Comprehensive Plan Map Changes



ORD2025-07 - Exhibit C - Proposed Zoning Map Changes

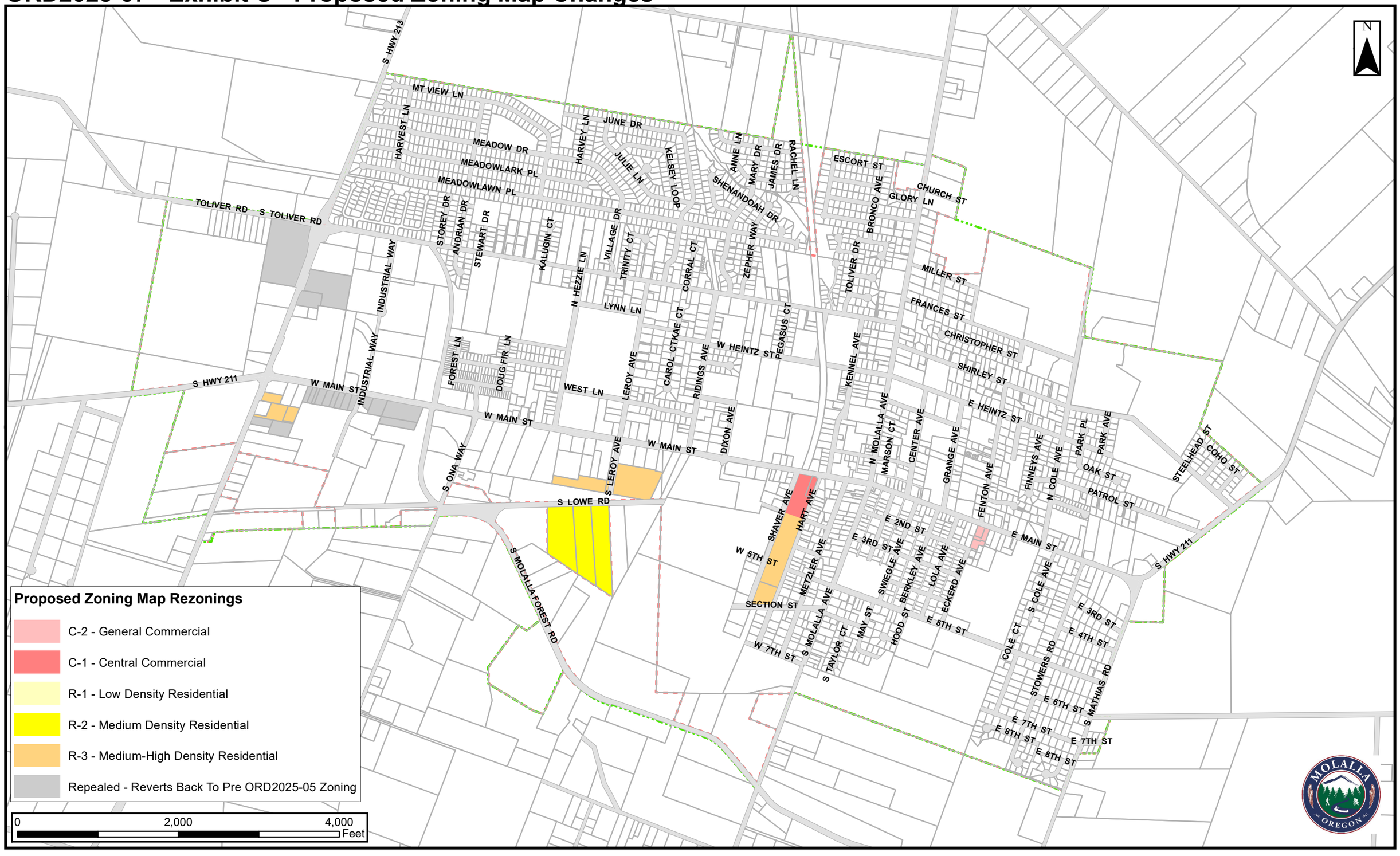


EXHIBIT C – PROPOSED DEVELOPMENT CODE AMENDMENT TEXT EDITS

Existing Language – Black

Proposed Revisions - Red

Proposed Removals – Red Strikethrough

Molalla Municipal Code Section 17-2.3.160 Accessory Dwellings.

Accessory dwellings are subject to review and approval through a ~~Type II~~ Type I procedure, pursuant to Section ~~**17-4.1.030**~~ **17-4.1.020**, and shall conform to all of the following standards:

A. One Unit. A maximum of one accessory dwelling unit is allowed per legal lot.

B. Floor Area. An accessory dwelling unit shall not exceed 800 square feet of floor area, or 40 percent of the primary dwelling unit's floor area, whichever is smaller. The unit may be a detached cottage, a unit attached to a dwelling, or in a portion of an existing dwelling. The floor area of any garage associated with the primary dwelling is not included in the calculation of maximum floor area.

C. Building Design. The accessory dwelling shall comply with applicable Oregon Structural Specialty Code requirements.

D. Building Height. The height of an accessory dwelling shall not exceed the height of the primary dwelling.

CITY OF MOLALLA

Staff Report

Agenda Category: ORDINANCES AND RESOLUTIONS

Agenda Date: Wednesday, July 23, 2025
Submitted by: Cindy Chauran, Finance Director
Approved by: Dan Huff, City Manager

SUBJECT: Resolution No. 2025-17: Declaring the City's Election to Receive State Revenue Sharing

FISCAL IMPACT: $1,360,200

RECOMMENDATION/RECOMMENDED MOTION:
Staff recommends approval of Resolution No. 2025-17.

BACKGROUND:

In order to receive State shared revenues, Oregon Revised Statute requires cities to annually declare eligibility and formally elect to participate. The City wishes to receive shared funds and has provided an opportunity for the public to comment on the use of said funds at the Budget Committee meeting on May 21, 2025.

The City is in compliance with the requirements.

ATTACHMENTS:
Res 2025-17 Resolution Declaring election for Receive SRS FY 2025-26.draft.pdf

RESOLUTION NUMBER 2025-17

A RESOLUTION OF THE CITY OF MOLALLA, OREGON, DECLARING THE CITY'S ELECTION TO RECEIVE STATE REVENUE SHARING

WHEREAS, the Legislature of the State of Oregon has provided for the apportionment of certain revenues to the cities of the State of Oregon; and

WHEREAS, such legislation provides that a city, in order to participate in the sharing of those certain revenues, must express an election to receive such funds, which election must be made prior to July 31 of the fiscal year; and

WHEREAS, Pursuant to ORS 221.770 the city must elect to receive the State Revenue Sharing Program; and

WHEREAS, the City of Molalla desires to receive portion of such funds; and

WHEREAS, the City certifies that it published notice and held a Public Hearing before the Budget Committee on May 21, 2025, giving citizens opportunity to comment on use of State Revenue Sharing; and

WHEREAS, the City published notice and held a Public Hearing before the City Council on June 11, 2025, giving citizen's the opportunity to comment on use of State Revenue Sharing.

Now, Therefore, the City of Molalla resolves as follows:

Section 1: Pursuant to ORS 221.770 does hereby elect to receive its proportionate share of the revenues to be apportioned to the cities by the State of Oregon for the Fiscal Year 2025-2026.

Section 2. This Resolution shall become effective immediately upon passage by Molalla City Council.

Adopted this 23rd day of July 2025.

_____

Mayor, Scott Keyser

ATTEST:

_____

Christie Teets, City Recorder

CITY OF MOLALLA

Staff Report

Agenda Category: ORDINANCES AND RESOLUTIONS

Agenda Date: Wednesday, July 23, 2025
Submitted by: Cindy Chauran, Finance Director
Approved by: Dan Huff, City Manager

SUBJECT: Resolution No. 2025-18: Certifying All Requirements to Receive State Shared Revenues Have Been Met

RECOMMENDATION/RECOMMENDED MOTION:
Staff recommends approval of Resolution No. 2025-18.

BACKGROUND:

In order to receive State shared revenues, Oregon Revised Statutes require cities to annually declare eligibility and formally elect to participate. To be eligible to receive funds, a city must have provided four or more of the following services; police, fire, streets, sanitary sewer, storm water, planning, and one or more utility service.

The City of Molalla provides sufficient services to meet this standard, as the City of Molalla provides four or more municipal services. Therefore, the City is in compliance with the requirements.

ATTACHMENTS:
Res 2025-18 Shared Revenue Resolution certifying requirements FY 2025-26 7.23.2025.pdf

RESOLUTION NO. 2025-18

A RESOLUTION OF THE CITY OF MOLALLA, OREGON, CERTIFYING ALL REQUIREMENTS TO RECEIVE STATE SHARED REVENUES HAVE BEEN MET

WHEREAS, ORS 221.760 provides as follows:

Section 1. The officer responsible for disbursing funds to cities under ORS 323.455, 366.785 to 366.820, and 471.805 shall, in the case of a city located within a county having more than 100,000 inhabitants according to the most recent federal decennial census, disburse such funds only if the city provides four or more of the following services:

1) Police protection
2) Street construction, maintenance, and lighting
3) Sanitary sewer
4) Storm sewer
5) Planning, zoning, and subdivision control
6) One or more utility services; and

WHEREAS, city officials recognize the desirability of assisting the state officer responsible for determining the eligibility of cities to receive such funds in accordance with ORS 221.760.

Now, therefore be it resolved that the City of Molalla hereby certifies that it provides the following four or more municipal services enumerated in Section 1, ORS 221.760:

1) Police protection
2) Street construction, maintenance, and lighting
3) Sanitary sewer
4) Storm sewer
5) Planning, zoning, and subdivision control
6) One or more utility services

Approved by the Molalla City Council this 23rd day of July 2025.

_____
Mayor, Scott Keyser

ATTEST:

_____
Christie Teets, City Recorder

CITY OF MOLALLA

Staff Report

Agenda Category: ORDINANCES AND RESOLUTIONS

Agenda Date: Wednesday, July 23, 2025
Submitted by: Mac Corthell, Assistant City Manager
Approved by: Dan Huff, City Manager

SUBJECT: Resolution No. 2025-20: Adopting the Water Intake Structure Pre-Design Report

FISCAL IMPACT: Approximately $5 million over 2-5 years.

RECOMMENDATION/RECOMMENDED MOTION:
I move that the Molalla City Council adopt resolution 2025-20, A RESOLUTION OF THE CITY OF MOLALLA, OREGON, ADOPTING THE 2025 WATER INTAKE PRE-DESIGN REPORT SUBJECT TO THE AMENDMENTS PROVIDED THEREIN.

BACKGROUND:

The City's Water Master Plan identifies a new Molalla River Intake as a High Priority project. Pre-design for this project began in July of 2024 and will conclude with Council's adoption of the pre-design report.

Next steps will be Design and funding identification. This will take place over this fiscal year and next with construction expected in approximately 3-years time. A more detailed and accurate schedule will be provided as this Design and Funding phase plays out.

A handful of amendments for the final report were not yet formatted into the report at the time of adoption. They are provided for in the report as comment boxes with red outlines and will be incorporated at the time of adoption.

ATTACHMENTS:
Res2025-20 Adopting Water Intake Pre-Design Report
ExhibitA_Res2025-20.pdf

RESOLUTION NO. 2025-20

A RESOLUTION OF THE CITY OF MOLALLA, OREGON ADOPTING THE 2025 WATER INTAKE PRE-DESIGN REPORT SUBJECT TO THE AMENDMENTS PROVIDED THEREIN

WHEREAS, the City of Molalla is committed to ensuring a sustainable and efficient water supply system for its residents, businesses, and visitors; and

WHEREAS, the City recognizes the need to upgrade its water intake structure to meet current and future demands, ensuring a reliable and safe water supply; and

WHEREAS, a comprehensive pre-design report has been completed, providing detailed analysis and innovative solutions for the proposed water intake structure project; and

WHEREAS, the pre-design report incorporates environmental, financial, and practical considerations, and aligns with the City's long-term water management goals; and

WHEREAS, adopting the pre-design report is a crucial step in moving the project forward to the design phase; and

WHEREAS, the City Council has reviewed the pre-design report and acknowledges the expertise and diligence of the engineering team, stakeholders, and City staff involved in its preparation.

Now, Therefore, the City of Molalla Resolves:

Section 1. The Molalla City Council hereby adopts the Water Intake Pre-Design Report and amendments provided therein, which is attached hereto as Exhibit A and incorporated herein by reference.

Section 2. Effective Date. This Resolution shall be effective upon adoption.

Signed this 23rd day of July 2025.

_____
Scott Keyser, Mayor

ATTEST:

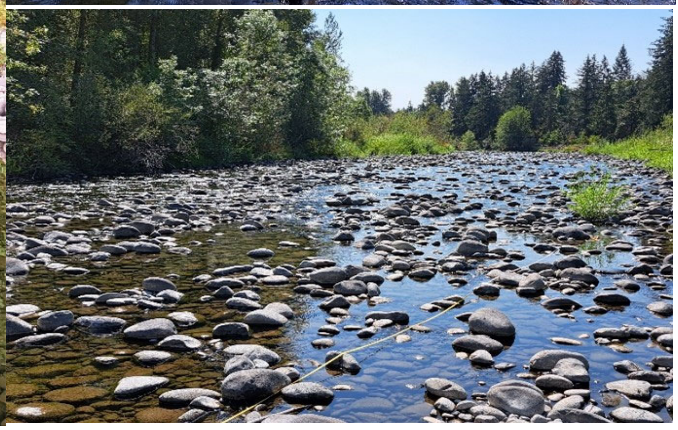
_____
Christie Teets, CMC
City Recorder

EXHIBIT A
DRAFT REPORT

City of Molalla, Oregon

Molalla Water Intake Predesign Report

Evaluation of Intake Alternatives and Preliminary Cost Estimates



Tetra Tech Project #200-12419-24001

June 2025

REGISTERED PROFESSIONAL ENGINEER
14,047
Gordon Munro
OREGON
July 26, 1988
GORDON A. MUNRO
EXPIRES: 12.31.26

TETRA TECH

TABLE OF CONTENTS

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APPENDICES

1. INTRODUCTION

In 1992, the City of Molalla constructed a raw water intake on the Molalla River that included intake screens and a booster pump station. The pump station and screens were destroyed in a major flood event in 1996. An emergency intake was constructed in 1997 approximately 90 feet downstream of the original structure, along with a new pump station located approximately 500 hundred feet from the riverbank. Both intake facilities had a capacity of at least 3 cubic feet per second (cfs), consistent with the City's authorized surface water right.

While the emergency intake has served the City reliably for over 25 years, the facility presents a number of ongoing challenges that limit its long-term viability. The location and condition of the intake result in seasonal performance issues, high maintenance requirements, and reduced reliability during low river flow periods.

Issues with the existing emergency intake include the following:

- Rocks and cobbles must be removed annually from the intake structure.
- Algae growth on the screen surfaces reduces performance.
- The existing air burst cleaning system is insufficient to maintain clear screens.
- During low summer flows, the screens are partially exposed above the water surface.

In recent years, the City transferred 4 cfs of water rights from Trout Creek to the Molalla River to increase its permitted diversion capacity. The combined total of Molalla River surface water rights is now 7 cfs (approximately 4.5 million gallons per day (mgd)). The intent is to meet projected future 2040 demand of up to 4 mgd and support the potential for the full water right of 7 cfs. However, the availability of the transferred right during the low-flow season is variable and not guaranteed year-round.

This predesign evaluation was initiated to identify a long-term solution for raw water diversion that addresses existing operational issues, improves maintainability and reliability, and ensures the City can meet its future water supply needs. The evaluation is based on field investigations, site-specific hydraulic modeling, geotechnical exploration, and coordination with City staff.

The evaluation includes the following components:

- Determine the capacity and condition of existing water source facilities.
- Verify future demand requirements based on updated planning assumptions.
- Conduct a geotechnical investigation to assess feasibility of a Ranney Well at the current site.
- Evaluate seasonal availability and long-term reliability of the City's water rights.
- Perform hydraulic modeling of the Molalla River to evaluate flow depth, sedimentation, and channel stability.
- Identify environmental permitting and wetland constraints applicable to intake improvements.
- Develop two technically viable intake alternatives for comparative evaluation.
- Recommend a preferred alternative for advancement into design and permitting.

The results of this evaluation are intended to inform future design decisions, facilitate permitting coordination, and support long-term infrastructure planning for the City's raw water supply.

2. CAPACITY AND SYSTEM EVALUATION

2.1 CAPACITY OF INTAKE GRAVITY PIPES

Flow from the intake structure is conveyed to the pump station through three gravity pipes: two 20-inch ductile iron pipes from the intake to a junction manhole, and one 24-inch ductile iron pipe from the manhole to the pump station. The capacity of each pipe was evaluated using Manning's equation, based on known slopes and standard roughness assumptions. The results of these calculations are summarized in Table 2-1.

Table 2-1. Gravity Pipe Capacity Based on Manning's Equation

Pipe Segment	Diameter (inches)	Slope	Roughness Coefficient	Capacity (mgd)
Pipe 1: Intake to Manhole	20	0.0200	0.012	13.81
Pipe 2: Intake to Manhole	20	0.0200	0.012	13.81
Pipe 3: Manhole to Pump Station	24	0.0033	0.012	9.12

The results confirm that the existing gravity system has sufficient capacity to deliver the design flow of 4 mgd under normal operating conditions. The alignment and profile of the gravity piping is shown in Figure 2-1, which includes pipe slopes, elevations, and connection points.

2.2 CAPACITY OF PUMP STATION

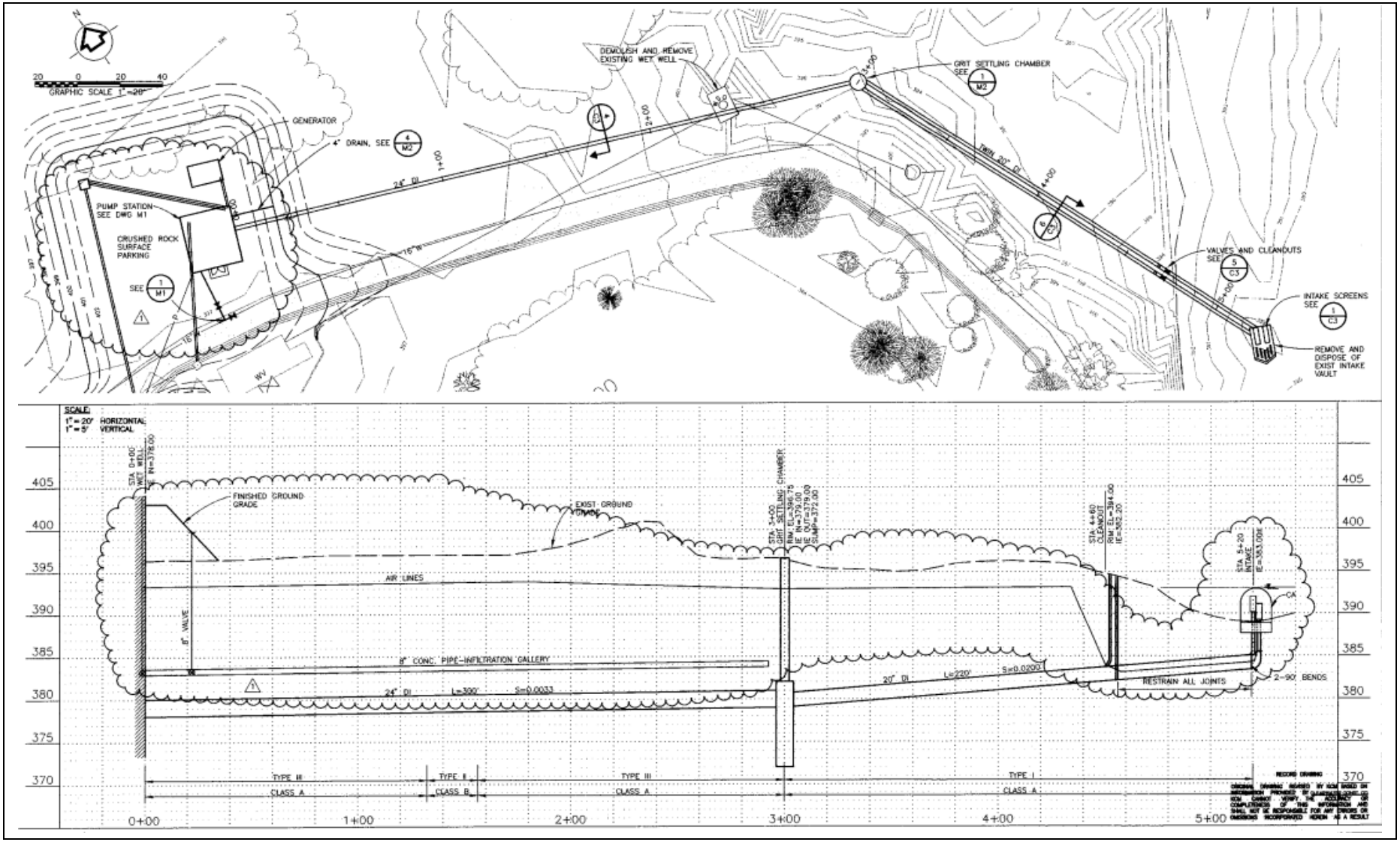
Currently, the pump station is equipped with two large pumps and one smaller pump:

- Two 1,400-gallon-per-minute (gpm) pumps. When both pumps are operational, they provide a combined capacity of 2,800 gpm.
- One 800 gpm pump. This smaller pump operates independently and cannot run simultaneously with the larger pumps due to hydraulic incompatibility.

The total capacity of the pump station is 2,800 gpm, which is sufficient to meet the City's design flow of 4 mgd. However, there is limited redundancy. If one of the 1,400 gpm pumps is out of service for maintenance or repair, the station is limited to 1,400 gpm—equivalent to only 2 mgd—which may not meet peak day demands.

To address this issue, it is recommended that the 800 gpm pump be replaced with a third 1,400 gpm unit. This upgrade would maintain the full 2,800 gpm capacity with any single pump offline, providing the necessary redundancy and operational reliability for the system.

Figure 2-1. Plan and Profile of Gravity Piping System



It's not PVC - - it's ductile iron

Might it be good to mention that the 16" ductile iron forcemain is about 1500 feet long.

2.3 CAPACITY OF THE FORCE MAIN

The force main is a 16-inch PVC pipe. In pressure pipes, sizing is based on velocity: a minimum velocity of 3 feet per second (fps) is necessary to keep solids suspended, while a maximum of 8 fps is recommended to maintain reasonable energy costs. An absolute maximum of 15 fps is established to prevent potential damage to the pipe.

To assess the capacity of the force main for a future demand of 4 mgd, flow rates were calculated at key velocities, and expected velocity was calculated at various operating conditions. The results are as follows:

- Flow Rate at 3 fps: Approximately 2.9 mgd
- Flow Rate at 8 fps: Approximately 7.2 mgd 7.7
- Flow Rate at 15 fps: Approximately 13.5 mgd 14.5
- Velocity at 4 mgd: Approximately 4.4 fps 4.2
- Velocity at 2 mgd (one pump running) 2.2 fps 2.1

If you use a 16" ductile iron ID of 16.53", these numbers will change. Depends on if you want someone to take exception when reading the report

These results indicate that the force main has sufficient capacity to handle the projected future demand of 4 MGD. At this flow rate, the velocity is 4.4 fps, above the target of 3 fps, which helps keep solids in suspension. However, sustained operation at lower flow rates, such as when only one pump is running, should be avoided to reduce the risk of solids settling in the pipe.

2.4 RECEIVING STRUCTURE AT THE WATER TREATMENT PLANT

The City of Molalla operates a potable Water Treatment Plant (WTP) located approximately 0.3 miles west of the raw water intake structure. The plant, used year-round, was upgraded in 2020 to a design capacity of 4 mgd.

The water system includes two prestressed concrete storage tanks with a total capacity of 3.2 million gallons:

- The 2.0 MG Tank, built in 1998, has a bottom elevation of 547.39 feet and an overflow elevation of 566.4 feet, with an 18-inch overflow pipe with a 48” bell. The tank features a 130-foot free-spanning dome roof with an air vent and is secured by a double locking hatch and WTP fencing.
- The 1.2 MG Tank, constructed in 1976 by CROM Prestressing, Inc., has a bottom elevation of 546.0 feet and the same overflow elevation as the larger tank (566.4 feet), with a 24-inch overflow pipe. Its 100-foot free-spanning dome roof includes a 30-inch air vent, and the tank is approximately 21 feet tall. Security measures include a hinged plate over the ladder and WTP fencing.

The storage is also used to provide disinfection contact time (CT). Usually, the volume used for contact time is not counted toward treated water storage volume because of the impact of using the CT volume. If the CT volume is used, then there will be a water quality issue that the City needs to address.

2.5 SYSTEM STORAGE CAPACITY

In Oregon, there is no mandated requirement for water storage; however, best practices recommend a minimum storage capacity of at least 2 days of average daily demand to ensure communities can meet their needs during high usage or supply interruptions. The optimal storage capacity is considered to be 3 days of average daily

demand, while the maximum recommended storage capacity is 6 days, as exceeding this can lead to water quality concerns.

The existing reservoir capacity is 3.2 million gallons (MG). Below are the calculated storage requirements for existing conditions and projected future conditions.

The current storage requirements are based on the current average daily demand (ADD) of 1.23 mgd from the Water Management and Conservation Plan (WMCP). The calculated current storage needs are as follows:

- Minimum Storage (2 days): 1.23 mgd × 2 = 2.46 MG
- Optimal Storage (3 days): 1.23 mgd × 3 = 3.69 MG
- Maximum Storage (6 days): 1.23 mgd × 6 = 7.38 MG
- Actual Storage Days: 3.2 MG/1.23 mgd = 2.6

The future storage requirements are based on the 2040 projected average daily demand (ADD) of 1.63 mgd from the WMCP. The calculated future storage needs are as follows:

- Minimum Storage (2 days): 1.63 mgd × 2 = 3.26 MG
- Optimal Storage (3 days): 1.63 mgd × 3 = 4.89 MG
- Maximum Storage (6 days): 1.63 mgd × 6 = 9.78 MG

The current storage is sufficient for present needs at approximately 2.6 times the average day demand. At the projected future 2040 needs the existing storage can accommodate approximately two times the average day demand; additional storage of approximately 1.7 MG would be prudent but not required. This would likely be rounded up to 2.0 MG.

However, the storage volume also includes storage for contact time during disinfection, which is not typically considered available for operational use. The storage volume required for CT should be verified and deducted from the operational storage. It is anticipated that this will show that additional storage would be recommended to meet current conditions to provide for greater operational flexibility and reliability. There are other options such as adding CT through additional volume or increasing the hydraulic efficiency of the existing storage.

2.6 GENERAL EVALUATION OF THE PUMP STATION

A walkthrough of the pump station was conducted with Tetra Tech and City personnel. A general assessment was performed to identify deficiencies; however, this evaluation should not be considered an in-depth review of the system. Key observations include the following:

- Generator Condition: The existing generator, rated at 350 kW, is outdated and should be replaced. It is essential to confirm with electrical personnel whether the current generator can effectively run two pumps and to assess the feasibility of operating three pumps simultaneously.
- Air Line Integrity: There may be leaks present in the existing air lines, which could impact system performance and efficiency.
- Sump Pump Performance: The sump pumps located in the wet well are not effectively removing solids. An upgraded system is necessary to ensure proper operation and maintenance.

Confirm w/Seth, I think existing is only 235kW. Is this, by chance, the size identified as being needed when TetraTech electrical met with Seth onsite sometime after our May 9 meeting

- Flapper Valve Position: The flapper valve at the discharge of the sump pumps is situated in the wet well, which can lead to back pressure issues. It is recommended to relocate the valve to a higher position to mitigate this problem.
- Maintenance Challenges: The manhole located between the screen and the pump station frequently backs up with solids, and there is currently no effective method for removal. This situation requires attention to improve accessibility and maintenance procedures.

Overall, these deficiencies indicate needs for improvement in the functionality and reliability of the pump station.

2.7 COMPARISON OF MOLALLA'S WATER USE TO STANDARD VALUES

Molalla's current water use of 125 gallons per capita per day (gpcd), as shown in Table 6.2.7 of the 2020 WMCP, is slightly above the average planning value of 120 gpcd. This range reflects a typical mix of residential, commercial, and limited industrial demand. Molalla's use falls comfortably within the expected range of 80 to 150 gpcd:

- 80 gpcd represents a best-case scenario, achievable only in fully residential systems with minimal unaccounted-for water.
- 150 gpcd is typical of systems with significant industrial demand, which is not the case for Molalla.

The per capita usage projections were based on raw water diversion records, which calculate average water use by dividing total water use—including domestic, commercial, and City demands—by the population. These records provided the current per capita usage of 125 gpcd.

Future projections in the 2020 WMCP assume improvements to the water distribution system, which will reduce unaccounted-for water losses. By 2040, this was projected to decrease per capita use to 101 gpcd for raw demand and 99 gpcd for City demand, reflecting increased efficiency and conservation. This assume a 20 percent reduction in unaccounted-for water.

Achieving a 20 percent reduction, as suggested in the projections, is optimistic. While the City is making progress in addressing leaks, the overall system is aging, and new leaks may continue to emerge. To achieve a 20 percent reduction, it is anticipated that a substantial investment would be required, and that it would need to be ongoing.

It is suggested that the current 125 gpcd water demand be used to project the future water demand.

3. FUTURE CAPACITY NEEDS

The City has indicated that a capacity of 4 mgd (6.23 cfs) is the projected capacity of the new intake. Note that the 4 mgd is slightly lower than the total water right on the Molalla of 7 cfs (4.48 mgd). This should be compared to the maximum-day demand, as the source typically needs to meet daily demands. Peak-hour demands are typically met using storage capacity in treated water reservoirs.

In order to verify the projected capacity, it has been assumed that the water usage rate will remain the same at 125 gpcd, which will provide a higher projected demand than shown in the 2020 WMCP. Using the 2040 maximum-day demand from Table 6.3.1 of the 2020 WMCP (3.0 mgd) and multiplying by the ratio of the existing and proposed future gallons per capita day (125/101), provides a maximum day raw water demand of 3.75 mgd.

Therefore, the design capacity of 4 mgd is sufficient to meet the future needs projected out to 2040. It is suggested that the facility be designed for the full potential water right of 4.48 mgd (7 cfs).

4. GEOTECHNICAL REPORT SUMMARY

A geotechnical investigation was conducted based on one approximately 100-foot-deep boring located on the west bank of the Molalla River near the existing intake structure. The purpose of the boring was to evaluate whether subsurface conditions would support construction of a Ranney Well collector in this area. A full copy of the geotechnical report is provided in Appendix A. A summary of findings is provided below.

4.1 SOILS

The subsurface profile observed at the boring location consisted of the following:

- Alluvium: Silty gravel with sand, containing cobbles and boulders, was encountered from the ground surface to approximately 13 feet below ground surface (bgs).
- Molalla Formation: Moderately to highly weathered sandstone, siltstone, and mudstone were encountered below the alluvium to the full depth of the boring at 101.5 feet bgs. This material is considered to have moderate permeability.

Groundwater was encountered at a depth of approximately 5.1 feet bgs.

4.2 SEISMIC

A seismic screening evaluation was conducted based on available geologic and hazard data. The following observations were made:

- The potential for liquefaction at the site is considered low.
- No additional consideration for site amplification beyond the standard Site Class C designation is required.
- The risk of fault rupture at the site is low.
- Landslide susceptibility is considered low to moderate.

Based on this information, no geologic hazards are anticipated that would prevent construction of an intake or related facilities in this area.

4.3 RANNEY WELL CONSIDERATIONS

The feasibility of constructing a Ranney Well along the Molalla River was evaluated based on a subsurface boring and regional well log review. In general, subsurface conditions along the west bank appear relatively consistent, and the single boring near the existing intake is considered representative of the area. Well logs indicate the surficial alluvial deposit along the west bank ranges from approximately 13 to 15 feet thick. At the existing intake location, the deposit was confirmed to be 13 feet deep.

Of the 13 feet of alluvium, only the lower 8 feet is saturated. The boring location sits slightly upslope from the riverbank, and there is a downward gradient to the river, reducing the effective saturated thickness at the intake. This limited thickness is not expected to provide adequate yield. Preliminary estimates suggest a flow potential in the low hundreds of gallons per minute, which is insufficient to meet the City's future supply needs.

In addition, there is potential for large cobbles within the alluvium. Although cobbles were not encountered in the boring or in nearby well logs, surface observations of the riverbed at the intake location suggest that cobbles are present and could interfere with lateral installation. If encountered, these materials would pose a significant constructability challenge.

Below the alluvial layer, the underlying Molalla Formation consists of moderately to highly weathered sandstone, siltstone, and mudstone. These materials are not suitable for collector laterals due to their low permeability and lack of porosity.

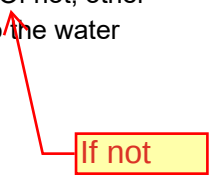
On the east bank of the river, well logs suggest deeper alluvial deposits, ranging from 26 to 39 feet. This is consistent with the channel morphology in this reach, where sediment deposition tends to occur along the inside bend (east bank), and scour is more common on the outside bend (west bank). While deeper alluvium could offer improved yield, it is still unlikely to meet long-term supply goals. Additionally, cobbles have been noted in east bank logs, presenting the same constructability risks.

Developing a Ranney Well on the east bank would require property acquisition, construction of new access, and installation of a transmission main beneath the river. Depending on final hydraulic conditions, a second pump station may be necessary.

In addition to the geotechnical and constructability concerns, the City's surface water rights may not be transferable to a groundwater collector. Any potential transfer would require a detailed hydrogeologic evaluation and approval through the Oregon Water Resources Department (OWRD), and success is not guaranteed.

Given the limited saturated alluvium, likelihood of cobble interference, unsuitable underlying soils, east bank access constraints, and uncertainty regarding water rights transfer, it is recommended that the Ranney Well alternative not be pursued further.

Note that the geotechnical investigation was for the area near the existing 1997 intake; therefore, it is specific to that location. Review of other regional well logs suggests that the soils profile will be similar in other locations, but it is possible that a location could be found elsewhere that would be suitable for a Ranney Well. Site specific geotechnical investigations would be required to determine if other location would be feasible. ~~Of not~~, other locations would likely be significantly more expensive as a new pump station and force main to the water treatment plant would be required.



5. WATER RIGHTS REPORT SUMMARY

A water rights evaluation was performed to assess the reliability of the City's existing surface water rights on the Molalla River and to evaluate the feasibility of transferring the authorized points of diversion (POD). A technical memorandum is included in Appendix B. A summary of key findings is provided below.

5.1 RELIABILITY

The City holds two surface water rights on the Molalla River:

- **Certificate 91537** authorizes the use of 3 cfs. This is a senior water right and is considered fully reliable. The authorized POD for this right is located downstream of the existing intake, likely due to a mapping error. This discrepancy is not expected to impact the City's continued use of the right.
- **Certificate 95806** authorizes the use of 4 cfs and was transferred from Trout Creek to the Molalla River. The availability of this water right is limited to the flow conditions at the original Trout Creek site, as defined in the transfer conditions. Based on data collected in 2023:
  - The full 4 cfs was available from November through June.
  - From July through October, the average available flow was 2.68 cfs, and the minimum recorded flow was 1.94 cfs.

These findings indicate that the City can reliably access 3 cfs year-round and potentially up to 7 cfs (4.52 mgd) during higher flow months. However, during the low-flow season (July through October), the full 7 cfs is not guaranteed.

- Available water right year-round: 3 cfs (1.94 mgd)
- Available November–June: Up to 7 cfs (4.52 mgd)
- Available July–October – average: 5.68 cfs (3.67 mgd)
- Available July–October – minimum: 4.94 cfs (3.2 mgd)

The 2025 maximum-day demand per the City's 2020 WMCP is 2.6 mgd. The projected maximum-day demand for 2040, adjusted to reflect a per capita use of 125 gpcd, is approximately 3.75 mgd. These values indicate that current water rights are likely sufficient to meet maximum day demand in the near term, including during the summer months. However, by 2040, summer availability may fall short.

If the City is successful in reducing per capita demand by 20 percent, there may be adequate water rights to meet summer demand through 2040. This will depend on flow conditions in Trout Creek and the associated environmental considerations.

Given the seasonal limitations and long-term uncertainty, it is recommended that the City consider a multi-pronged approach to water rights and long-term raw water supply planning. The following options may warrant further evaluation:

- Implement water loss reduction and conservation measures.
- Investigate securing a new surface water right on the Molalla River.
- Explore purchasing and transferring existing Molalla River water rights.
- Evaluate the potential acquisition of a well and associated groundwater right.

- Consider development of emergency backup wells.
- Investigate aquifer storage and recovery.
- Evaluate interconnections with nearby purveyors for supplemental supply. The two closest purveyors that potentially have water would be Woodburn, and Oregon City. Oregon City receives treated water from the South Fork Water Board.

5.2 FEASIBILITY OF TRANSFERRING THE WATER RIGHTS

Four alternatives were evaluated for transferring the City's water rights, specifically Certificates 91537 and 95806:

- **Retaining the rights at the existing intake location—**There is no known issue with continuing to divert water at the current location. The City may choose to resolve the POD discrepancy for Certificate 91537 through a correction process with OWRD, but at this time it is not required.
- **Transferring the rights to the 1992 intake location—**Certificate 91537 (3 cfs) is expected to be transferable to this location without injury to other users. Transferring Certificate 95806 (4 cfs), however, may be more difficult. OWRD is likely to find cause for injury unless mitigation is proposed due to the in-stream water right. Approval may require consent from affected parties or additional flow augmentation strategies. The process is considered challenging.
- **Splitting the PODs between the 1992 and 1997 intake locations—**Under this approach, Certificate 91537 could be left where it is or transferred to the 1992 location, while Certificate 95806 would remain at the current intake. This would preserve the full 7 cfs while minimizing transfer complexity. OWRD is expected to approve the 91537 transfer; the same conditions for 95806 would still apply.
- **Transferring the rights to a Ranney Well—**Transfer to a Ranney Well may be possible if hydraulic connection to the river is demonstrated and no injury to other users occurs. A full hydrogeologic investigation would be required to assess connectivity and yield. As discussed in Section 4.3, the Ranney Well option is not considered viable at this time due to poor subsurface conditions and limited water availability at the current location. Additional information in the vicinity indicates that it would be challenging to find a good location for a Ranney Well nearby.

During the study, the City had interactions with OWRD where the State indicated that if the actual point where the water is withdrawn from the river is within about 300-feet of the official POD no transfer of the POD would be required. Based upon this interpretation, neither water right would need to be transferred.

6. HYDRAULIC MODELING REPORT SUMMARY

A hydraulic evaluation of the Molalla River in the vicinity of the intake structure was conducted to support assessment of intake alternatives. The full modeling report is included in Appendix C and documents river hydrology, modeled flows under both flood and low-flow conditions, and an assessment of river channel behavior near the intake. A summary of the findings is provided below.

6.1 RIVER FLOW

Flow conditions were developed using public hydrologic records and extrapolated to the intake site. These values were used in a one-dimensional HEC-RAS model to evaluate river behavior across a range of seasonal and flood conditions. The modeled flows are shown in Table 6-1.

Table 6-1. Molalla River Modeled Flows by Return Period and Exceedance Probability

Flow Condition	Flow (cfs)
100-Year Flood	23,293
50-Year Flood	20,598
25-Year Flood	18,293
2-Year Flood	8,253
10% Exceedance (high base flow)	161
25% Exceedance	96
50% Exceedance (low base flow)	59

The 1996 flood event is estimated to have reached 19,700 cfs, placing it between a 25- and 50-year flood event. Even under low-flow conditions, the river appears capable of supplying the City's full 7 cfs diversion right. Note that while there is sufficient supply in the river, the City may not be able to withdraw the full water right due to limitations on the Trout Creek certificate 95806.

Note that the velocity near the 1992 and 1997 intakes are modeled to range from 0.1 fps at the lowest base flow, to 10.3 fps in high flow situations.

6.2 WATER DEPTH

The hydraulic model produced water surface elevations, which were compared to surveyed riverbed elevations to estimate water depth at each intake site. This is especially important under summer low-flow conditions when screen submergence is critical. The intake structure at the 1992 site sits at a riverbed elevation of 383 feet, while the 1997 structure sits higher, at 388.6 feet (top of the two screens are 392 feet and 390.8 feet). Table 6-2 summarizes water depths at each site under various modeled flow conditions.

Table 6-2. Modeled Water Depths at Intake Locations

Flow Condition	1992 Intake Depth (feet)	1997 Intake Depth (feet)
2-Year Return	13.7	8.3
10% Exceedance	6.4	0.9
25% Exceedance	7.1	1.7
50% Exceedance	7.0	1.6

These results show that the 1992 intake location remains submerged under low-flow conditions, while the 1997 site becomes shallow or partially exposed. Anecdotal observations from the summer of 2024 noted that the 1997 screens were approximately half-submerged.

There is a temporary rock weir that raises the water surface in the summer helping to create a deeper pool where the 1997 intake is located. While this may provide 1 to 2 feet of additional depth, its effectiveness varies year to year and is not part of a formal, engineered design. The City may consider including a permanent, permitted weir structure as part of future improvements.

6.3 LOCATION STABILITY

The hydraulic model, combined with grain size data collected during a field visit in September 2024, was used to evaluate channel stability and sediment transport. Both intake locations appear relatively stable, and no large-scale channel migration is expected in the vicinity of the existing intake.

The presence of the original 1992 concrete intake and riprap upstream of the structure provides additional site stability. However, the depression in the riverbed at that location is not expected to self-clean. Fine materials (sands and silts) mobilize during events as small as a 2-year flood and tend to settle into the depression under lower flow conditions, gradually causing aggradation. Regular sediment removal and adaptive maintenance will be needed for any structure placed in this area.

Although larger cobbles are generally stable under most conditions, some are mobilized during higher flows. This is consistent with the City's need to manually remove cobbles around the existing screens each year. These materials can damage intake structures if not accounted for in design.

Given the critical nature of the intake structure, a detailed geomorphic assessment of channel behavior and implementation of appropriate scour protection measures are recommended as part of final design.

7. ENVIRONMENTAL PERMITTING SUMMARY

An environmental permitting review was conducted to identify the anticipated regulatory approvals required for improvements to the City's intake structure on the Molalla River. A detailed summary of permitting pathways is included in Appendix D.

Permit applications are typically submitted following the 60 percent design milestone. Some approvals may be processed concurrently, while others may require coordination in sequence. The following list outlines the expected permits, administering agencies, and approximate review durations based on recent experience with similar in-water projects:

- **ESA Section 7 Consultation—**Consultation under Section 7 of the Endangered Species Act will be required to evaluate project impacts on federally listed fish and wildlife species and their habitat. This review is coordinated by the U.S. Army Corps of Engineers (USACE) in consultation with NOAA Fisheries and the U.S. Fish and Wildlife Service.

  Estimated review time: 12 months or longer. Some recent consultations have approached two years depending on workload and species concerns.

- **Section 106 Review (National Historic Preservation Act)—**Review under Section 106 is required to assess potential impacts on cultural and historic resources. This process is managed through the Oregon State Historic Preservation Office (SHPO).

  Estimated review time: approximately 3 months.

- **Clean Water Act Section 401 Water Quality Certification—**This certification is required from Oregon Department of Environmental Quality (DEQ) to confirm compliance with state water quality standards. The review is conducted as part of the Joint Permit Application (JPA) package submitted to USACE and the Oregon Department of State Lands (DSL).

  Typically reviewed concurrently with Section 404 permitting.

- **Oregon Removal-Fill Permit**—A permit from DSL is required for any excavation or fill within waters of the state. This permit is submitted jointly with the federal Section 404 application.

  Reviewed in parallel with USACE.

- **Fish Passage Approval**—Approval from the Oregon Department of Fish and Wildlife (ODFW) is required for any structure affecting fish movement. Review is conducted through the JPA and Fish Passage Approval process.

  Standard review time: 45 days, though recent projects have experienced delays.

- **Clean Water Act Section 404 Permit**—This federal permit is administered by USACE and is required for discharge of fill into waters of the United States, including work in streams and wetlands. Wetland delineations are reviewed for concurrence by DSL.

  Review duration varies based on project scope and interagency consultation.

- **NPDES 1200-C Construction Stormwater Permit**—This permit is required for construction projects disturbing more than 1 acre. It is issued by Oregon DEQ and may be obtained by the City or the selected contractor.

  Estimated review time: 120 days.

Early agency coordination is recommended to confirm applicable requirements and ensure alignment with project schedule and construction timing, particularly with respect to in-water work windows.

8. WETLANDS DELINEATION SUMMARY

A wetland delineation was performed at the project site, generally encompassing the river frontage back to the pump station. The wetlands delineation report contained in Appendix E provides a full description of the methods used, data collected, mapped areas, and conclusions. This section summarizes the findings.

Wetlands were identified in three general locations. In general, they are described as:

- **Wetland A:** West of the pump station and south of the access road. It is 0.005 acres and continues west out of the study area.
- **Wetland B:** Just east of the pump station where the drain from the building discharges. It is 0.133 acres and continues north out of the study area.
- **Wetland C:** East of Wetland B, north of the existing manhole. It is 0.045 acres and continues north out of the study area.

The location of the wetlands does not appear to impact decisions with regard to the proposed new intake or associated improvements. There are no wetlands adjacent to the riverbank in the area of the existing intake, the 1992 intake, the bank between them, or on the near bank where a Ranney Well could be located. Further, there are no wetlands along the proposed on-shore pipeline alignment between the intake and the pump station.

The wetlands will need to be staked during construction to ensure they are not impacted during the construction process.

9. SCREEN OPTIONS

9.1 RIVER CONDITIONS AT CURRENT INTAKE SITES

A preliminary evaluation of the existing river conditions at the current intake site was completed using a satellite image from Google Earth. At the intake site, the Molalla River goes through a large-radius bend, changing direction from flowing northwest to north to northeast. At the apex of the bend—where the river shifts from north to northeast—an island has formed in the river, creating a split channel. The current intake site is located in the west portion of this split channel.

A natural geologic feature must be present in this section of the river to create the split channel, as the outside of a river bend is not a typical location for such a feature. From the aerial image, it appears that the island creating the split channel is relatively stable, with vegetation present on the island and large pieces of woody material lodged along its edges. The downstream portion of the island also appears stable but consists primarily of a gravel bar, indicating that bedload and suspended sediment are deposited annually, preventing stable vegetation from becoming established in that area.

At the downstream end of the west channel—where the intakes are currently located, it appears that a gravel bar control has formed, creating a small riffle where water from the side channel rejoins the main river channel. Approximately three-fourths of the way down the split channel, a cross-channel also allows water from the split channel to rejoin the main channel upstream of the confluence.

The presence of the island and the resulting split channel at the intake site creates favorable conditions for installation of a new intake structure. While the water surface elevation and volume of flow in the split channel are expected to be similar to those in the main channel, the island provides some protection to the intake from the full force of river flow along the outside bend.

9.2 INTAKE SCREEN OPERATING CHARACTERISTICS

Intake screens designed to meet NOAA Fisheries and ODFW criteria must incorporate the following design standards to protect juvenile fish:

- Approach velocity limits based on screen type:
  - Passive screens (no cleaning system): maximum of 0.2 fps
  - Actively cleaned screens: maximum of 0.4 fps
- Screen face materials must be corrosion-resistant and maintain a smooth, uniform surface. Acceptable materials include stainless steel, aluminum, plastics, or other antifouling materials.
- Screen openings must not exceed the following:
  - 3/32 inch for circular holes
  - 1/16 inch in the narrow direction for slotted openings
  - 3/32 inch across the diagonal for square openings
- Percent open area for the screen surface must be at least 27 percent.
- Screen fabrication and installation must ensure there are no gaps greater than 1/16 inch between walls, support members, and screen panels.

Screen cleaning systems are classified as either manual or automated. Manual systems require maintenance personnel to brush debris and vegetation from the screen face. Automated systems may use physical (brush), hydraulic (water jet), or pneumatic (air burst) cleaning mechanisms.

While many of these requirements relate to the screen structure itself, others depend on the hydraulic characteristics of the river at the intake location. These include approach velocity, sweeping velocity, and sediment/debris transport capacity. These site-specific factors must be evaluated to ensure the selected screen type will perform reliably under seasonal flow conditions.

9.3 ORIENTATION IN RIVER

One of the best locations for the installation of an intake structure is in a straight reach of the river with flow evenly distributed across the entire channel width. This type of configuration helps prevent debris and sediment from being forced into or past the intake structure, which can lead to increased maintenance.

Straight reaches also support the development of consistent sweeping velocity along the screen face, which improves debris transport and reduces fouling. In contrast, locations with uneven or turbulent flow—such as bends or backwater areas—can result in sediment buildup and reduced screen performance.

Final orientation of the intake should take into account the specific hydraulic characteristics of the selected site to ensure alignment with prevailing flow conditions and minimize operational challenges.

The 1992 and 1997 intake locations are not in a straight stretch of the river; therefore, additional maintenance is expected to maintain the pool around the intake. The City has experienced this with the current intake, and it is expected that this requirement will continue.

9.4 FLOW CONDITIONS IN RIVER

A key component to the operation of an intake structure is the presence of a velocity past the screen under all flow conditions. This sweeping velocity helps maintain the transport of debris and sediment away from the screen face, reduces the potential for clogging, and supports consistent hydraulic performance. A continuous flow past the screen also ensures a steady supply of water is available to the intake throughout seasonal fluctuations.

9.5 SEDIMENT AND DEBRIS TRANSPORT IN RIVER

Typical problems associated with intake screens are commonly related to sediment and debris build-up on or in front of the screen. For reliable operation, river conditions at the intake must allow for sediment and debris to move past the screen—particularly during higher flow conditions. The area in front of the screen should not function as a depositional zone, as accumulation can reduce intake efficiency and increase maintenance requirements.

9.6 DOWNSTREAM CONTROL IN RIVER

All intake screens require a defined depth of water to provide the screen area necessary to meet fish screen criteria. This water depth is typically maintained by a downstream control that holds the water surface elevation at

the intake location. Downstream control may be provided by natural features or engineered structures, depending on site conditions.

Discussions about the operating characteristics of several different screen types in the following section will reference these river conditions to evaluate how each type may perform at the Molalla River intake site.

9.7 INTAKE SCREENS – DESCRIPTION, ADVANTAGES AND DISADVANTAGES

The following subsections provide a description of several types of intake screens, along with their operational characteristics, advantages, and disadvantages. These screen types are evaluated in the context of river conditions, sediment and debris transport, and maintenance considerations relevant to the Molalla River.

9.7.1 Infiltration Systems

Description and Operational Characteristics

This intake type typically consists of a set of horizontal perforated pipes buried in the channel substrate with large gravel surrounding the pipes. The large gravel creates large volumes of pore space around the perforated pipes, allowing the design volume of water to flow into the pipes and onto the pump station. The horizontal pipes typically attach to a manifold that is connected to the supply line to the pump station.

Advantages

- No infrastructure required along the channel edge
- Bedload and suspended sediment pass over the channel substrate above the horizontal pipes

Disadvantages

- Fine channel sediment tends to fill the pore space, decreasing flow to the pipes
- A large air burst system is required to keep the pore spaces clear of fine sediment
- Typically requires a complete rebuild within 10 years

9.7.2 Vertical Screens

Description and Operational Characteristics

This intake type typically consists of a perforated or slotted plate installed along the edge of the river channel. The screen plate is constructed to meet all fish screen criteria and is typically designed as an actively cleaned screen requiring a brush or air burst cleaning system. Most often designed with a coarse trash rack along the channel edge to keep bedload, suspended sediment, and wood debris from damaging the screen.

Advantages

- Simple to design and construct using a modular design

- Damaged screens easily replaced

Disadvantages

- Requires a brush or air burst cleaning system
- If set back into the bank, sweeping velocity criteria may not be met
- Aquatic vegetation is likely to grow on screen plates during warm months and require brushing

9.7.3 Sloped Screens

Description and Operational Characteristics

This intake type typically consists of a perforated or slotted plate installed at an angle and sloping back into the bank. It is typically installed without a trash rack and it is best if the intake to be located in a straight section of the river to minimize the amount of bedload, suspended sediment, and large wood debris impacting the screen. Flow distribution across the river must be fairly uniform to ensure water is constantly flowing past the screen face.

Advantages

- Simple to design and construct using a modular design
- Damaged screens easily replaced

Disadvantages

- Requires a brush or air burst cleaning system
- Susceptible to damage from large debris or bedload
- Aquatic vegetation likely to grow on screen plates during warm months and require brushing

9.7.4 Cone Screens

Description and Operational Characteristics

This intake type consists of one or more cone-shaped screens that sit on a concrete pad along the edge of the river channel. A brush system is incorporated into the design to keep the screen clear of aquatic vegetation and fine sediment. It is typically installed without a trash rack, requiring the installation site to have a low volume of bedload and wood debris.

A variation to the installation along the river bank is to install a coarse trash rack along the river bank and divert water into a pipeline to the pump station. Flow to the pump station is by gravity where the cone screens operate. Water not passing through the cone screen flows through a pipeline back to the main river channel. Enough hydraulic gradient must be present in the river channel for this configuration to properly work.

Advantages

- Manufactured to meet all state and federal fish screen criteria
- Automated cleaning system keeps screen clear of vegetation and debris

Disadvantages

- If installed along the river edge, very susceptible to damage by bedload or large debris
- Depth of water above the top of the screen must be maintained to ensure proper operation
- Maintenance requires divers or dewatering to remove the screen

9.7.5 Dual Tee Screens

Description and Operational Characteristics

This intake type consists of two cylindrical screens attached to a central chamber that leads to an opening in the intake wall located along the edge of the river channel. A brush system is incorporated into the design to keep the screen clear of aquatic vegetation and fine sediment. It is typically installed without a trash rack, requiring the installation site to have a low volume of bedload and wood debris.

Advantages

- Manufactured to meet all state and federal fish screen criteria
- Automated cleaning system keeps screen clear of vegetation and debris
- Screens can be raised and lowered in and out of the water at the intake site for maintenance

Disadvantages

- If installed along the river edge, very susceptible to damage by bedload or large debris
- Depth of water above the top of the screen must be maintained to ensure proper operation

9.7.6 Cylindrical Screens

Description and Operational Characteristics

This intake type consists of one or more vertical cylindrical screens that feed water into the pump station through the bottom of the screen where it is attached to a concrete pad. A vertical wall is installed along the edge of the channel with a concrete pad extending out into the river channel from the vertical wall. Gravity flow carries the water from the screen into a manifold that leads to the supply pipeline to the pump station. A brush system is incorporated into the design to keep the screen clear of aquatic vegetation and fine sediment. It is typically installed without a trash rack, requiring the installation site to have a low volume of bedload and wood debris.

Advantages

- Manufactured to meet all state and federal fish screen criteria
- Automated cleaning system keeps screen clear of vegetation and debris

Disadvantages

- If installed along the river edge, very susceptible to damage by bedload or large debris
- Depth of water above the top of the screen must be maintained to ensure proper operation
- Maintenance requires divers or dewatering to remove the screen

10. INTAKE OPTIONS

Intake options were developed by combining viable site locations with screen types that meet hydraulic, operational, and fish protection criteria. This section summarizes the evaluation of site feasibility, identifies intake concepts that are not recommended for further consideration, and outlines several hybrid configurations that may inform final design decisions. Two primary intake alternatives are carried forward into conceptual development based on their overall performance and implementation potential.

The alternatives are intended to meet the City's long-term water supply needs while minimizing permitting risk, construction complexity, and maintenance requirements.

10.1 INTAKE LOCATION CONSIDERATIONS

For intakes other than the Ranney Well Collector, it is recommended that two locations be considered: the 1992 intake location and the 1997 intake location. There are four main reasons for this.

- Water rights:
  - The POD for the initial water right of 3 cfs could be at either intake location.
  - The POD for the water right transferred from Trout Creek of 4 cfs is near the 1997 intake location, and it is not clear that it can be moved to the 1992 intake location.
  - Moving either water right upstream is not considered viable due to the potential harm to the instream water right.
  - Moving either water right downstream is a potential but was not further evaluated due to the additional costs for land, pump station and force main.
- River hydrology:
  - Based on the hydraulic modeling, the best location for an intake is the 1992 intake location.
  - Moving the intake upstream or downstream in the vicinity of the existing intake does not provide better conditions for a long-term intake.
  - The island, rip-rap and other existing conditions appear to make the side channel a stable and more protected location for an intake.
- Existing facilities:
  - The existing facilities, including the pipe from the intake to the pump station, the pump station, and the transmission pipe to the water treatment plant, are in reasonable condition and have sufficient capacity. They can be utilized if the intake remains in the 1992 or 1997 locations.
  - Relocating the intake to a place other than the 1992 or 1997 locations would require additional improvements and cost. This would include land purchase or easements, access road, pump station and force main to the water treatment plant.
- Land ownership:
  - The City owns the land around the 1992 and 1997 intake locations, so no easements or property acquisition would be required to continue using them.
  - Moving the intake either upstream or downstream would require easements or property acquisition, which would impact schedule and cost.

10.2 OPTIONS NOT RECOMMENDED

In the 1992 and 1997 intake locations the following intake concepts were considered but are not recommended for further evaluation based on geotechnical limitations, long-term performance concerns, or regulatory uncertainty.

10.2.1 Reuse of Existing 1992 Infiltration System

From the 1992 concrete structure on the riverbank, it is clear the infiltration system is still under the river and potentially undamaged. One of the advantages of an infiltration system is that it is out of the stream flow and is not impacted by debris and larger cobbles.

As described earlier, these types of systems typically need a total rebuild every 10 years as they become clogged with fine sediment. This system was installed in 1992 and was no longer used after 1996. Therefore, it has been in place for over 30 years. The cleaning system was only operated for the first four years. It is highly likely that this system is no longer usable.

It is recommended that this option not be pursued further.

10.2.2 Ranney Well Collector

There are several considerations with regard to a Ranney Well Collector. There must be the proper soils to make the system successful, the water is typically considered surface water and must still be treated, and water rights must be available.

The geotechnical evaluation indicates that the soils are fairly uniform along the banks of the Molalla River. This means that regardless of the location along the bank in the vicinity of the existing intakes, the soils are likely to be the same. The boring near the existing intake showed soils that would not be favorable to a Ranney Well Collector.

The surficial alluvium was found to be approximately 13 feet thick, with only the lower 8 feet saturated. This limited thickness is not expected to provide sufficient yield. In addition, cobbles observed in the riverbed could interfere with installation of collector laterals, and the underlying Molalla Formation is not suitable for lateral construction.

The alluvial deposit appears to be thicker on the east bank, ranging from 26 to 39 feet. While this may provide improved yield, it is still likely to be lower than required. Further, cobbles have been noted in well logs on the east bank. Developing a Ranney Well on the east side would also require property acquisition, new access, and installation of a pipe under the river. Depending on hydraulics, a second pump station may be required.

At this time, it is not clear that the existing water rights on the Molalla River could be transferred to a Ranney Well Collector. Transfer would require a detailed hydrogeologic evaluation and approval through OWRD, with no guarantee of success.

It is recommended that this option not be pursued further in the 1992 or 1997 locations.

10.3 OPTIONS SELECTED FOR DEVELOPMENT

Several intake options were developed by combining viable screen types with the two primary intake locations evaluated in Section 10.1. These combinations reflect different approaches to flow reliability, water rights strategy, and long-term maintenance.

The following configurations were evaluated:

1. Buried infiltration with sloped or vertical screen at the 1992 location — Provides a backup intake located out of the main channel for low-flow periods. The buried infiltration system would generally require full replacement approximately every 10 years. This option assumes that the full water right can be transferred to the 1992 location.
2. Cylindrical screen and vertical or sloped screen at the 1992 location — Includes a low-flow backup screen within the channel, exposed to debris, but only requiring replacement if damaged. This configuration also assumes full transfer of the City's water rights to the 1992 site.
3. Vertical or sloped screen at 1992 location — Uses a single, wider screen to meet low-flow demands without in-channel or buried components requiring additional maintenance. This also assumes that all water rights are transferred to the 1992 site.
4. Vertical screen at the 1992 location with cylindrical screens at the 1997 location — Keeps a presence at both sites. The 1997 intake would use upgraded cylindrical screens to improve cleaning performance. Some maintenance will still be required at that location, including periodic cobble removal. The City may also consider formalizing the temporary rock weir as a permitted structure. This approach acknowledges that transferring one of the water rights may not be feasible.
5. Vertical and cylindrical screens at the 1992 location with cylindrical screens at the 1997 location — Provides operational redundancy and low-flow backup capacity by distributing screening at both sites. The cylindrical screens at the 1997 location would be upgraded to improve cleaning. Similar to Option 4, this approach accounts for challenges in transferring one of the water rights and allows flexibility in diversion operations.

These options were reviewed based on site hydraulics, water rights limitations, constructability, and operational considerations. Based on input received during the first Charrette, two options were selected to move forward into preliminary design development.

Both alternatives assume that the existing 1997 screen structure will remain in place, that the selected new intake will be designed to accommodate the full 7 cfs diversion capacity, and hydromodifications to make the weir permanent.

will be evaluated

10.3.1 Sloped Screen at the 1992 Intake Location

This option consists of a fixed, sloped plate screen installed along the riverbank at the 1992 site sized for the full 7 cfs water right. The screen would be actively cleaned using an air burst system and designed to meet NOAA and ODFW fish screen criteria. This option benefits from favorable hydraulic conditions, year-round submergence, and reduced debris impact due to the protection provided by the mid-channel island. It also retains the existing intake screen at the 1997 site, with the addition of a trash rack to improve debris management.

This option has been selected for advancement as **Alternative 1.**

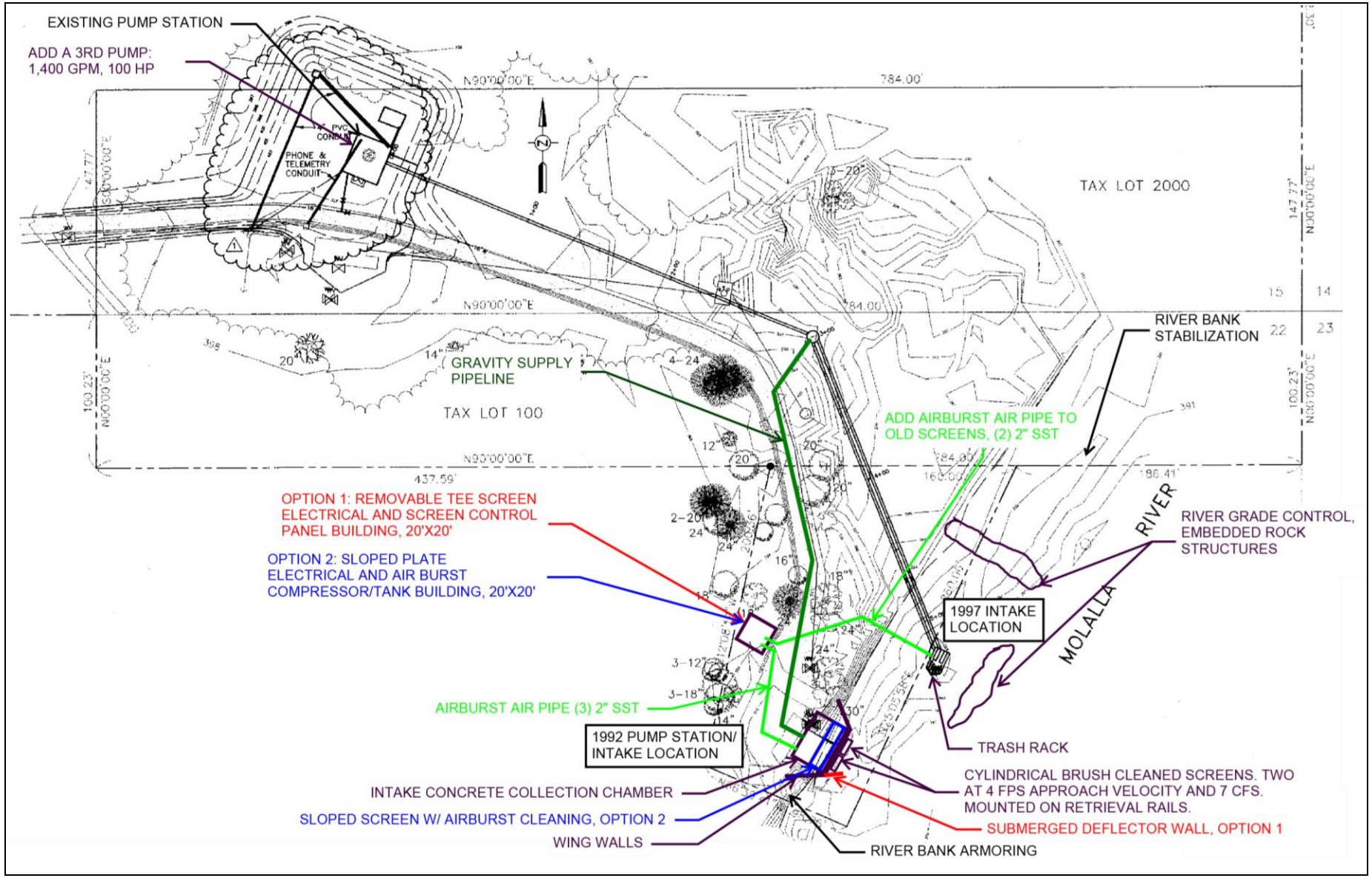
10.3.2 Removable Dual Tee Screens at the 1992 Intake Location

This option includes two modular dual tee screen units installed along the riverbank or within a protected intake structure sized for the full 7 cfs water right. Each unit contains two cylindrical screen elements equipped with internal brush cleaning systems and is designed to be removed for maintenance as needed. This configuration allows the City to retain the current points of diversion for both water rights and minimizes the need for major infrastructure modifications. It also includes continued use of the existing intake screen at the 1997 location, with the addition of a trash rack to improve debris management.

This option has been selected for advancement as **Alternative 2.**

A plan view of the project site is provided in Figure 10-1, showing the location of the two intake alternatives in relation to the existing intake, pump station, and surrounding infrastructure.

Figure 10-1. Intake Site Overview with Selected Alternatives



10.4 RECOMMENDED INTAKE ALTERNATIVES

10.4.1 Alternative 1—Sloped Screen at 1992 Intake Location

This alternative would consist of a fixed, sloped wedge-wire screen structure at the 1992 intake site. The screen would be cleaned using an air burst system and designed to meet fish protection criteria with reduced sediment buildup and simplified maintenance.

Screen Sizing and Configuration

This alternative would be designed to pass a maximum diversion rate of 7 cfs. Screen sizing was based on NOAA Fisheries criteria for actively cleaned screens, which limit approach velocity to 0.4 fps. At this velocity, the minimum required screen area would be 17.5 square feet. Table 10-1 shows screen area requirements at various approach velocities.

Table 10-1. Required Screen Area by Approach Velocity

Approach Velocity (fps)	Screen Area (square feet)	Notes
0.1	70.0	
0.2	35.0	Passive screen standard
0.4	17.5	Active screen standard
0.6	11.67	Debris swept by flow
1.0	7.0	Risk of debris reattachment

Screens would be installed on a concrete apron set at elevation 388.0 feet, sloped back at a 30-degree angle. Screen panels would be vertically positioned with 0.5 feet of clearance above and below the screen face to ensure submergence under all flow conditions. The modeled low water surface elevation at this location is 392.0 feet.

Three configurations were evaluated, each using three modular screen panels measuring 4.0 feet in width. Screen heights of 2.0, 2.5, and 3.0 feet were assessed to balance submergence, maintenance access, and total structure length. Heights of 2.5 to 3.0 feet were preferred for operational efficiency. Table 10-2 summarizes the screen configuration options considered.

Table 10-2. Sloped Screen Configuration Alternatives

Apron Elevation (feet)	Screen Height (feet)	Screen Width (feet)	No. of Screens	Total Area (square feet)
388.0	3.0	4.0	3	36.0
388.0	2.5	4.0	3	30.0
388.0	2.0	4.0	3	24.0

The selected screen layout would maintain full submergence under summer low-flow conditions while meeting fish screen criteria and minimizing overall structural footprint.

Structure Layout and Features

It is assumed that the existing concrete structure would be removed as it is not configured correctly for this type of screen. Details would be evaluated in the final design. It would be replaced essentially “in place” with a new concrete structure. The intake structure would include three modular screen bays separated by concrete walls. Each bay would contain a 4-foot wide wedge-wire screen panel mounted on a sloped concrete apron. The apron would extend 4 feet into the river channel and be set at elevation 388.0 feet.

Each bay would include the following elements:

- A back-wall opening with a slide gate for isolation
- A bulkhead above the screen face to control water level and minimize bypass flow
- A sediment trap located at the rear of the bay, set approximately 2 feet below the screen invert
- Grating at the top of the structure for access and maintenance

Figure 10-2 and Figure 10-3 show the plan and section views of the proposed Sloped screen intake structure, including apron alignment, screen elevation, and flow direction.

Cleaning System and Operational Considerations

An air burst cleaning system would be included to dislodge debris from the screen face. The system would be designed to operate periodically under normal flow conditions, using compressed air to remove accumulated material from the screen surface.

Under summer low-flow conditions, modeled sweeping velocities may be insufficient to fully transport dislodged debris away from the screen. As a result, manual brushing may be required during periods of high debris loading or reduced river flow.

Each screen bay can be isolated using slide gates, allowing for individual maintenance without interrupting overall system operation. Screens would be removable for off-season servicing or replacement. Top grating would provide access for cleaning and inspection, and the structural layout supports safe maintenance activities.

Figure 10-2. Sloped Screens Intake – Plan View

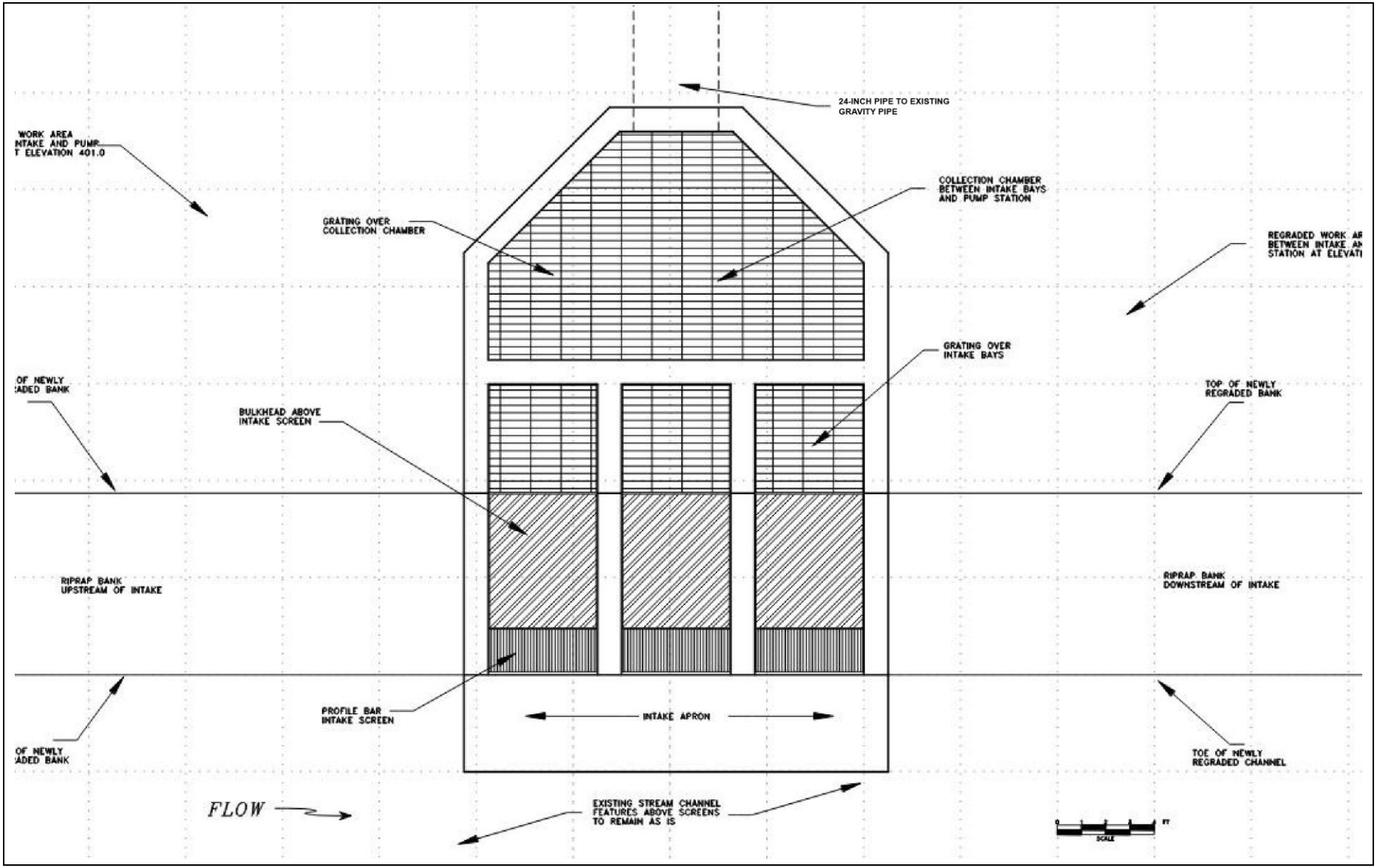
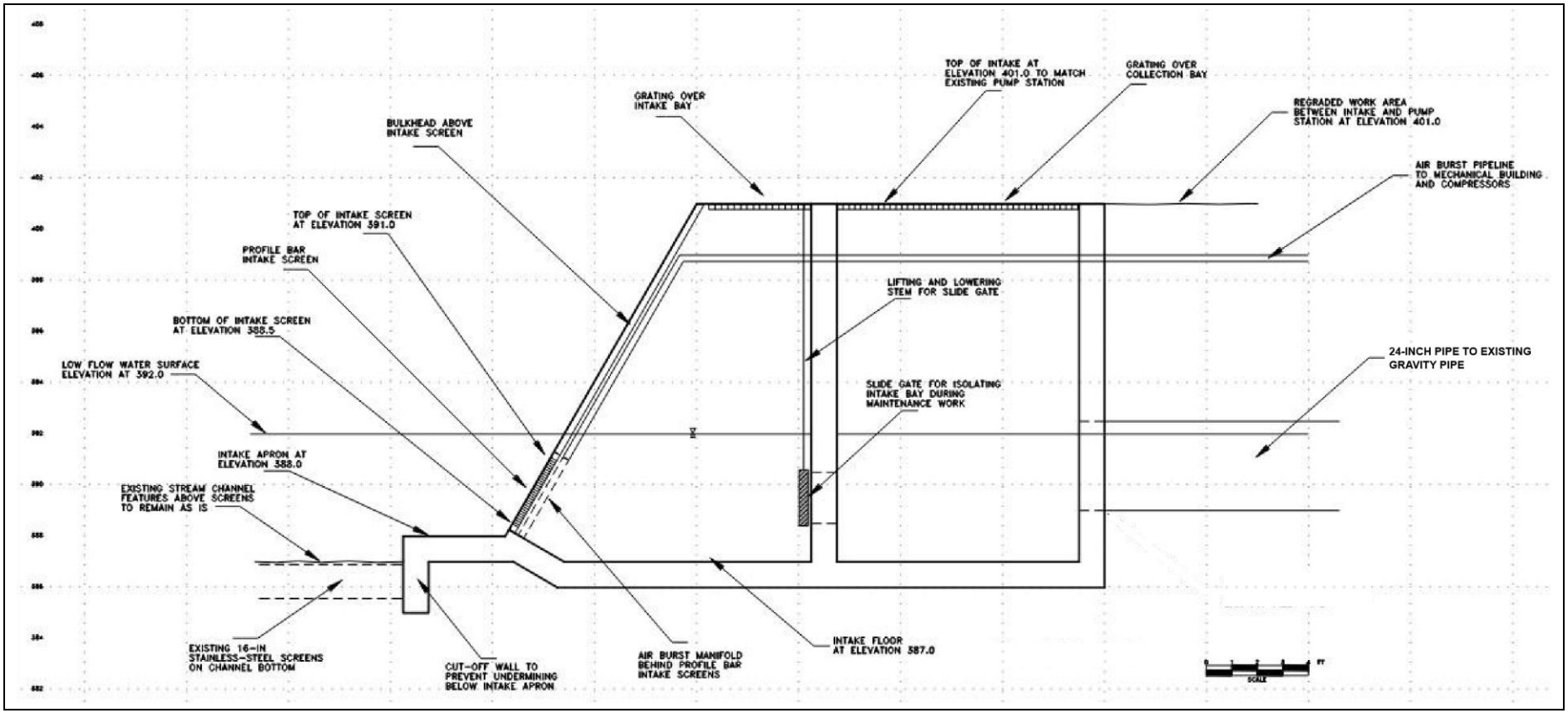


Figure 10-3. Sloped Screens Intake – Section View



10.4.2 Alternative 2—Removable Tee Screens at the 1992 Intake Location

This alternative would consist of two modular dual tee screen units installed at the existing 1992 intake location. Each unit would include two cylindrical screen elements equipped with internal brush cleaning systems. The design maintains the City's existing points of diversion and uses the current intake-to-pump station alignment.

Screen Sizing and Configuration

The screen area would be based on a maximum approach velocity of 0.4 fps, in accordance with NOAA Fisheries guidance for actively cleaned screens. A diversion rate of 7 cfs would require a minimum screen area of 17.5 square feet. Table 10-3 shows the required screen area at different approach velocities.

Table 10-3. Required Screen Area by Approach Velocity

Approach Velocity (fps)	Screen Area (square feet)	Notes
0.1	70.0	
0.2	35.0	Passive screen standard
0.4	17.5	Active screen standard

Each tee screen unit would include two horizontally mounted cylindrical screens. Screens would be positioned on a concrete apron set at elevation 388.0 feet and maintain 0.5 feet of vertical clearance above and below the screen body to ensure full submergence. The modeled low-flow water surface elevation at this location is 392.0 feet.

Three screen configurations were evaluated based on screen diameter, width, and resulting surface area. The 2.5-foot diameter screen was selected to balance required area with installation and maintenance considerations. Table 10-4 summarizes the screen configuration options considered.

Table 10-4. Tee Screen Configuration Alternatives

Apron Elevation (feet)	Diameter (feet)	Width (feet)	Screens per Unit	Total Area (square feet)
388.0	3.0	2.0	2	37.68
388.0	2.5	2.0	2	31.40
388.0	2.0	2.0	2	25.12

Structure Layout and Features

It is assumed that the existing concrete structure would be removed as it is not configured correctly for this type of screen. Details would be evaluated in the final design. It would be replaced essentially "in place" with a new concrete structure. Each tee screen unit would be mounted on a concrete apron within the intake channel. The screens would be positioned at elevation 388.0 feet and centered vertically in the water column to ensure full submergence during summer low-flow conditions.

Both screen units would discharge into a common concrete collection chamber that conveys water to the existing gravity intake pipeline. The chamber would be approximately 14 feet wide, matching the screen face, and include

a floor set 1 foot below the apron to collect sediment. The pipeline invert would be located 1 foot above the sediment trap floor to minimize solids intrusion.

The structure would include the following features:

- Reverse-seating gates to isolate each tee screen unit
- Sediment trap at the chamber floor
- Sloped back wall to reduce stagnant zones
- Top of structure elevation set at 402.0 feet to provide flood protection

The intake structure would minimize in-channel footprint and construction within the active riverbed, reducing potential impacts on fish passage and sediment transport processes. The modular layout would allow one screen unit to remain operational while the other is taken offline for maintenance.

Figure 10-4 and Figure 10-5 show the plan and section views of the proposed Tee screen intake structure layout and configuration.

Cleaning System and Operational Considerations

Each tee screen would include a motorized internal brush cleaning system. The system would rotate across the screen surface to remove algae, debris, and fine sediment. Screens would be designed to be removed for off-site servicing or replacement, and the intake layout would allow for alternating operation between units to maintain continuous flow during maintenance periods.

As with the sloped screen alternative, low-flow conditions during summer months may limit sweeping velocity along the screen face. This can reduce the effectiveness of the automated cleaning system, particularly during periods of high debris loading. Manual cleaning may be required during low-flow seasons to maintain screen performance.

The screen structure and collection chamber would be designed to support long-term maintenance. Isolation gates would allow one unit to be taken offline without interrupting system operation, and top access would be provided for inspection and servicing.

Figure 10-4. Tee Screens Intake – Plan View

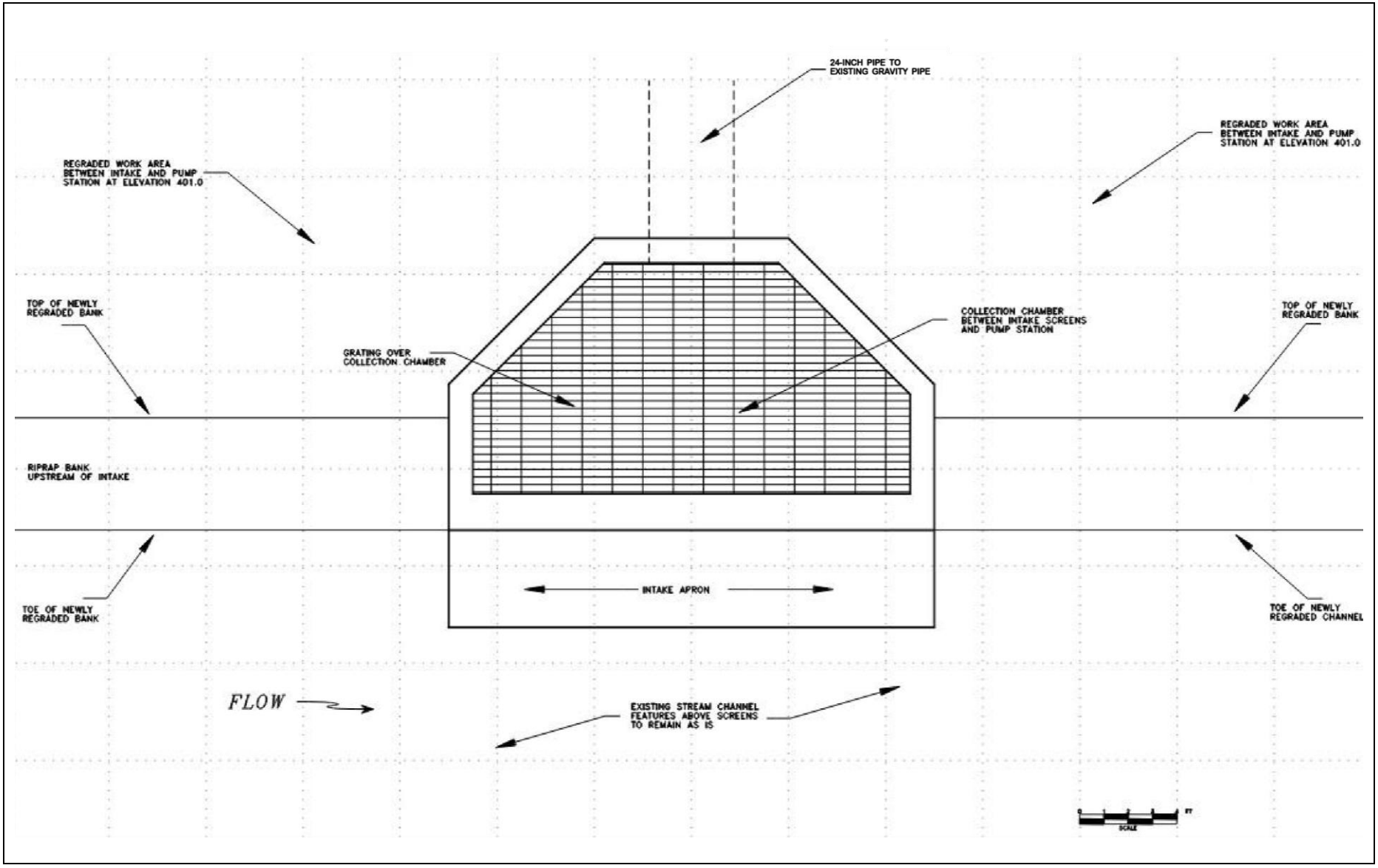
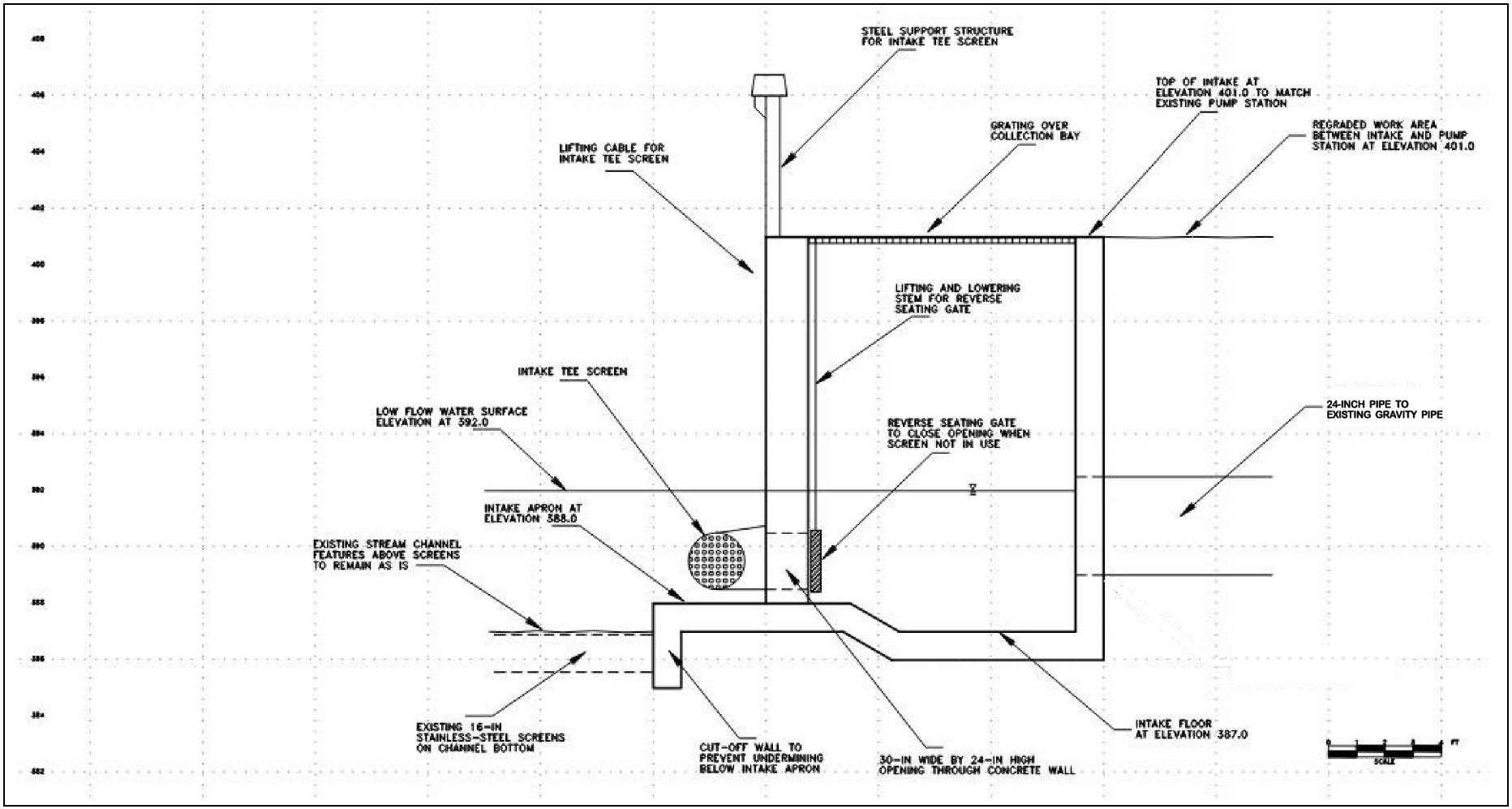


Figure 10-5. Tee Screens Intake – Section View



11. EVALUATION CRITERIA AND SCORING

Intake alternatives were scored using a set of weighted criteria developed in coordination with City staff. The scoring framework reflects City priorities related to reliability, risk, long-term maintenance, permitting, and construction feasibility.

11.1 CRITERIA SUMMARY

The weighted evaluation criteria, developed during Charrette #1, reflect performance factors such as reliability under low-flow conditions, tolerance to sediment and debris, long-term maintenance effort, permitting complexity, constructability, cost, and seasonal constraints. Each criterion was assigned an average weighting factor based on stakeholder input regarding its relative importance. The criteria and their associated average weights are shown in Table 11-1.

Table 11-1. Evaluation Criteria and Average Weighting Factors

Evaluation Criteria	Average Weight
Reliability – water availability	3.67
Reliability – tolerance to sediment and debris	3.00
Risk	3.67
Operations and Maintenance (O&M) requirements – ease of cleaning	3.00
O&M annual cost	2.33
Constructability	2.67
Capital cost	2.33
Impact to stream hydraulics	2.33
Permitting – environmental requirements	2.67
Permitting – water rights	3.33
Property requirements – purchase or easements	1.67
Schedule	2.67
Seasonal construction issues	2.33
Seasonal construction constraints	2.67

11.2 SCORING METHODOLOGY

Raw scores ranging from 1 (worst) to 5 (best) were assigned to each intake alternative based on engineering judgment, preliminary design data, and modeling results. These scores reflect relative performance in each category under expected operating conditions. Raw scores were multiplied by the weighting factors shown in

Table 11-1 to calculate weighted scores. The total score for each alternative represents the sum of weighted scores across all evaluation criteria.

11.3 SCORING RESULTS

Table 11-2 presents the results of the alternative evaluation scoring.

Table 11-2. Weighted Scoring Results by Alternative

Evaluation Criteria	Average Weight	Sloped Screen (Raw)	Sloped Screen (Weighted)	Tee Screen (Raw)	Tee Screen (Weighted)
Reliability – water availability	3.67	4	14.68	4	14.68
Reliability – tolerance to sediment & debris	3.00	4	12.00	3	9.00
Risk	3.67	4	14.68	3	11.01
O&M requirements – ease of cleaning	3.00	3	9.00	3	9.00
O&M annual cost	2.33	4	9.32	3	6.99
Constructability	2.67	3	8.01	3	8.01
Capital cost	2.33	4	9.32	4	9.32
Impact to the stream hydraulics	2.33	4	9.32	3	6.99
Permitting – environmental requirements	2.67	4	10.68	4	10.68
Permitting – water rights	3.33	5	16.65	5	16.65
Property requirements – purchase or easements	1.67	4	6.68	4	6.68
Schedule	2.67	3	8.01	3	8.01
Seasonal construction issues	2.33	3	6.99	3	6.99
Seasonal construction constraints	2.67	4	10.68	4	10.68
Total Score			149.02		134.69

146.02

11.4 COMPARATIVE SUMMARY

Both intake alternatives are technically viable and meet the City's design flow requirement of 7 cfs. The sloped screen alternative received a higher total score and is therefore preferred under the current evaluation criteria. The sloped screen alternative scored higher in reliability, operations and maintenance, and permitting-related

categories. The design includes fewer mechanical components, is less complex to maintain, and is located at a site with deeper low-flow water depths and reduced exposure to debris.

The tee screen alternative scored lower in most categories due to greater mechanical complexity, more in-channel work, and less favorable low-flow hydraulics. However, it remains a feasible option and may be revisited if future permitting or site constraints arise during design.

12. PRELIMINARY COST ESTIMATES

Planning-level cost estimates were developed for both intake alternatives using 10 percent design assumptions. The estimates include direct construction costs, a 30 percent contingency, contractor markup, and allowances for survey, permitting, design, and construction administration. All estimates are in 2025 dollars and are intended for preliminary design-level planning. The assumptions are based on preliminary design inputs and may be refined during coordination and development of the 30 percent design.

The estimate for the sloped screen alternative includes construction of a new intake structure with an air burst cleaning system, concrete apron, and new electrical and mechanical equipment. The estimate for the tee screen alternative includes a reinforced concrete intake structure with two modular screen units and assumes reuse of the existing pipeline alignment. Cleaning systems are integrated into the screen units and are not included as a separate mechanical line item.

A summary of estimated project costs for both alternatives is provided in Table 12-1. Detailed cost breakdowns are included in Appendix F.

Table 12-1. Summary of Estimated Project Costs of Alternatives 1 and 2

Cost Component	Alternative 1 – Sloped Screen	Alternative 2 – Tee Screens
Construction Subtotal	$ 2,335,000	$ $2,326,000
Mobilization, GC OH&P (15%)	$ 350,250	$ 348,900
Contingency (30%)	$ 700,500	$ 697,800
Permitting and Related Soft Costs	$ 285,000	$ 285,000
Preliminary/Final Design (15%)	$ 507,862	$ 505,905
Construction Admin & Inspection (15%)	$ 507,862	$ 505,905
Total Estimated Project Cost	**$ 4,686,475**	**$ 4,669,510**

Note: GC OH&P = general contractor overhead and profit

The total estimated project cost for Alternative 1 (Sloped Screen) is approximately $4.7 million, and the estimate for Alternative 2 (Tee Screens) is approximately $4.7 million in 2025 dollars. The estimates are within a half percent of each other, reflecting similar levels of anticipated construction effort and supporting infrastructure. Differences in cost are primarily attributed to the intake structure type and associated mechanical components. These estimates are intended for preliminary design-level planning and will be refined during development of the 30 percent design.

At this point in the project and level of estimating, the two alternatives are assumed to be the same capital cost. For purposes of funding it is suggested that the City consider the cost to be $5.0 million. This provides some buffer for potential inflation by the time the project goes to bid. Depending upon the actual time the project is bid out, the estimated cost may still need to be adjusted.

13. OPERATIONAL LIMITATIONS AND MAINTENANCE ISSUES

Operational limitations and maintenance issues at the pump station influence the selection and implementation of an intake alternative. Observations from a recent site walkthrough identified several areas of concern.

13.1.1 Pump Station Capacity and Redundancy

The existing pump station includes two 1,400-gpm pumps that can operate together and one 800-gpm pump that operates independently. This configuration provides a maximum capacity of approximately 2,800 gpm (~4 mgd) under ideal conditions. However, if one of the 1,400 pumps is offline, capacity is reduced to 1,400 gpm (~2 mgd), which falls short of the projected demand. Replacing the 800 gpm unit with a third 1,400 gpm pump should be considered to ensure full redundancy.

Note that the City intends to replace the 800 gpm pump with a 1,400 gpm pump, provide a connection point for an emergency pump, and replace the stand-by generator in the near future.

13.1.2 Mechanical and Maintenance Issues

The following issues were identified during the field evaluation:

- Air line leaks may reduce cleaning system performance and efficiency.
- Sump pump deficiencies may lead to solids accumulation, clogging, or reduced pump life.
- Flapper valve placement within the wet well may cause back pressure issues under certain conditions.
- Limited manhole access between the intake and pump station contributes to frequent solids buildup and complicates routine maintenance.

These issues should be considered during preliminary design to ensure the intake system integrates effectively with the existing pumping and conveyance infrastructure. These issues may also inform the evaluation criteria in Section 12 and the recommendations in Section 15.

The following considerations could affect cost:

- Air burst system and structure required for the sloped screen alternative
- Brush cleaning and retrieval systems that drive higher cost in the tee screen alternative
- Existing structure reuse potential in the tee screen alternative remains uncertain
- Both options include placeholder costs for the following:
  - Channel restoration
  - Cofferdams
  - Survey and geotechnical investigations
  - Permitting and design

Operational differences may affect long-term costs but are not included in this preliminary estimate.

14. RECOMMENDATIONS

14.1 SUMMARY OF FINDINGS

Two intake options were developed and evaluated:

- Alternative 1: Sloped fixed screen with air burst cleaning system
- Alternative 2: Removable tee screens with internal brush cleaning system

Both alternatives are technically viable and meet the City's design flow of 7 cfs. Hydraulic modeling, intake design criteria, operational limitations, and permitting considerations informed a side-by-side evaluation using criteria and weighting factors developed with City staff. Evaluation of these alternatives determined the following:

- Sloped screens provide a durable, simple configuration with fewer moving parts and lower long-term O&M costs
- Tee screens offer greater seasonal flexibility and easier mechanical access but require more complex infrastructure and potentially higher capital investment
- Evaluation scoring favored the sloped screen alternative, supported by better reliability scores, lower anticipated maintenance effort, and comparable cost-effectiveness over the project lifecycle

The second charette was held on May 29, 2025 attended by Tetra Tech and City staff. The intent of the charrette was to review the pros and cons of the two main alternatives, determine if additional information was required to make a decision, review and finalize the scoring of the alternatives, and make a decision concerning the alternatives. The consensus was that alternative #1 with the sloped screen is the recommended alternative.

14.2 NEXT STEPS

Based on the scoring results, comparative cost estimates, engineering judgment, and staff input the sloped screen alternative is recommended for advancement into preliminary design. This recommendation reflects the following priorities:

- Minimized long-term maintenance
- Lower mechanical complexity
- Enhanced flood and debris resilience
- Better alignment with existing site hydraulics and sediment behavior

Should future refinements or permitting efforts reveal feasibility constraints, the tee screen alternative remains a valid fallback configuration.

To support project development, the following next steps are recommended:

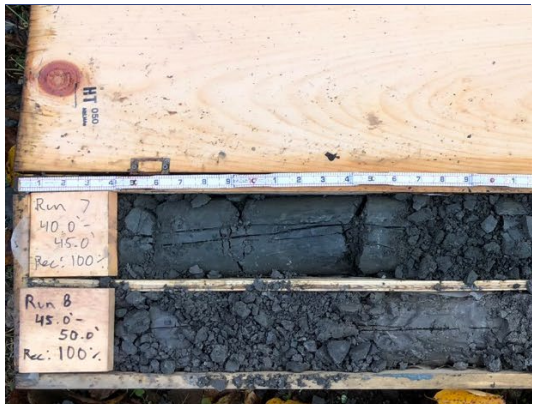
- Present the report to the City Council and obtain authorization to move forward with the project.
- Develop a funding program for the project. This may include grant and loan application, bond measures and other methods as appropriate.

- Advance the selected alternative to 60 percent design, including refinements to layout, structural configuration, and screening system.
- Initiate early coordination with permitting agencies (ODFW, DSL, USACE in consultation with NOAA Fisheries and US Fish & Wildlife, SHPO, DEQ, and Clackamas County) to begin the permitting process.

APPENDIX A. GEOTECHNICAL REPORT

All good (DK)

SUBMITTED TO:
Tetra Tech, Inc.
15350 SW Sequoia Parkway,
Ste. 220
Portland, Oregon 97224



BY:
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Lake Oswego, Oregon

(503) 210-4750
www.shannonwilson.com

GEOTECHNICAL SITE FEASIBILITY STUDY

Molalla Water Intake Predesign

MOLALLA, OREGON

SHANNON & WILSON

March 2025

Shannon & Wilson No: 113197

APPENDIX B. WATER RIGHTS MEMORANDUM

TECHNICAL MEMORANDUM

Water Rights Investigation for the City of Molalla Intake Evaluation

To: Gordon Munro, Tetra Tech, Inc.

From: Zach Pike-Urlacher, GSI Water Solutions, Inc.
Kimberly Grigsby, GSI Water Solutions, Inc.
Kenny Janssen, GSI Water Solutions, Inc.

Attachments: Attachment 1 - Water Right Table
Attachment 2 - Water Right Certificates
Attachment 3 – Trout Creek Hydrograph and Average Daily Streamflows

Date: May 13, 2025

Introduction

At your request GSI Water Solutions, Inc. (GSI), is providing this technical memorandum to Tetra Tech, Inc. (Tetra Tech) as part of the City of Molalla Water Intake Reconstruction project. This memorandum is provided to evaluate the status and reliability of the City of Molalla's (City) two water right certificates and to assess, from a water rights perspective, the feasibility of changing the authorized points of diversion (PODs) for the City's water rights to another surface water intake location. This memorandum also describes opportunities and limitations associated with changing the authorized POD to a collector well or riverbank filtration well to the extent possible with the available information.

Water Right Status and Reliability

The City holds two surface water rights that authorize the use of up to a total of 7.0 cubic feet per second (cfs) for municipal use. The authorized PODs for both water rights are located on the Molalla River. These water rights are described below. A water rights table that provides additional details about the rights is included in **Attachment 1**. Copies of the water right certificates are included in **Attachment 2**.

Certificate 91537

Certificate 91537 authorizes the use of up to 3.0 cfs of surface water from the Molalla River for municipal use. Certificate 91537 has a priority date of August 17, 1954, and does not include any conditions that impose additional limitations on the use of water under the water right.

Certificate 91537 is senior in priority to the Molalla River instream water right Certificate 72587, which is the primary driver of regulation on the Molalla River. GSI spoke with the District 20 Watermaster, Amy Landvoigt, who confirmed that water rights on the Molalla River that are senior to the instream water right are not typically regulated.

In addition, GSI evaluated the frequency at which water is expected to be available under Certificate 91537 based on available streamflow data. GSI reviewed mean daily streamflow data from United States Geological Survey (USGS) gage 14200000, located downstream of the City's intake and approximately three miles above

the intake for Canby Utility. This is currently the only active gaging station on the Molalla River, and GSI believes this would be the point of measurement upon which the watermaster would base any potential water right regulation for the river. The gaging station has been in operation intermittently since 1928, with continuous operation since October 2000. The lowest recorded streamflow since October 2000 was 26.4 cfs. There are few records of flows below 30 cfs from prior to 2000. The only substantial diversions on the Molalla River below the gage are two municipal use water rights held by Canby Utility, which authorize the use of up to a total of 20 cfs. Both of Canby Utility's water rights are junior in priority to Molalla's Certificate 91537. Given the senior priority of Molalla's Certificate 91537 and that measured streamflow at the gage has historically exceeded the rate required to meet the demands of downstream water rights on the Molalla River, the full 3.0 cfs authorized by Certificate 91537 is expected to be available, even during times of low streamflow.

It is worth noting that Certificate 91537 describes the authorized POD as being located 508.4 feet South and 725.3 feet West from the Northeast corner of Section 22 in Township 5 South Range 2 East, W.M. This location is approximately 465 feet to the southwest of the City's 1997 (current) intake structure. This discrepancy appears to be due to a mapping error. The claim of beneficial use map submitted to the Oregon Water Resources Department (OWRD) included two descriptions of the authorized POD location: GPS coordinates, and a measured distance from a section corner. The measurements do not, however, describe the same location. The GPS coordinates (45° 07' 40.88" N 122° 32' 23.95" W) describe a location near the City's 1992 intake location. However, OWRD does not accept GPS coordinates to describe POD locations in a claim of beneficial use. Accordingly, the measured distance was included in the certificate and is the currently authorized POD location. According to a recent communication between the City and OWRD, the agency does not appear to have significant concerns about the discrepancy in the POD location.[1]

Certificate 95806

Certificate 95806 authorizes the use of up to 4.0 cfs of surface water from Trout Creek for municipal use and has a priority date of March 11, 1921. The water right originally had an authorized POD located on Trout Creek. In 1999, OWRD approved transfer application T-6319, which moved the authorized POD from its original location on Trout Creek downstream to approximately the location of the City's 1997 intake on the Molalla River. Certificate 95806 describes the POD location as South 54 Degrees, 51 minutes, 45 seconds West, 356.2 feet from NE Corner, Section 22 in Township 5 South Range 2 East, W.M. GSI estimates that the authorized POD is mapped approximately 80 feet east of the City's current intake structure. This difference is likely a mapping discrepancy and is not expected to affect the City's ability to use water under the certificate or affect the City's ability to change the water right's POD.

As part of its approval of Transfer T-6319, OWRD limited the quantity of water that could be diverted at the new POD (on the Molalla River) to the quantity of water lawfully available at the original POD (on Trout Creek). OWRD also included a condition requiring that the City maintain a measuring device with remote access capability to measure the amount of water available at the original POD on Trout Creek. In compliance with this condition, the City installed a streamflow monitoring station with remote access capability (telemetry) on Trout Creek. Streamflow data for Trout Creek is estimated based on continuous stage (water level) data collected by a pressure transducer at the gaging station and a rating curve that relates river stage to measured streamflow. The gaging station was installed, streamflow measurements were taken, and the rating curve was developed by West Consultants.

Continuous streamflow data collected at the Trout Creek gaging station during the 2023 water year (October 1, 2022, to September 30, 2023) was provided to GSI. GSI used this streamflow data to evaluate the amount

[1]An OWRD Water Rights Transfer Specialist (Arla Davis) stated: "I spoke with a few folks around here and we think it most likely isn't necessary for the City to file a transfer application to move the POD back to its original point (described by Certificate 91537) as long as the it was originally moved due to a natural change to the stream (flooding in 1996, consistent with ORS 540.510)." She also noted that the agency had not identified intervening points of diversion (presumably meaning between the authorized POD and the actual intake location).

of water that would have been available to divert under Certificate 95806 during this period. It is important to note that while these data provide a snapshot of water availability, the amount of water available to divert under Certificate 95806 will vary year to year, and the streamflows in 2023 are not expected to represent extremely low flow conditions. Further, GSI did not evaluate the accuracy of the streamflow data developed by West Consultants.

No other surface water rights authorize the use of water from Trout Creek except the instream water right (Certificate 72584), and the City's Certificate 95806 is senior in priority to the instream right. As a result, the City's use of water under Certificate 95806 is limited primarily by the streamflow available in Trout Creek. According to the October 2022 to September 2023 gage data provided to GSI, streamflow at the City's original POD consistently exceeded the 4.0 cfs authorized by Certificate 95805 during the period from November through June, and the City would have had access to the full authorized rate under this water right during this period. However, the recorded average daily streamflows were less than 4.0 cfs for 98 days during the remainder of the water year. These days occurred during the months of October, and July through September, including every day between July 4 and August 30. The lowest average daily streamflow measured during this period was 1.94 cfs. During this period, the City's authorized diversion under Certificate 95806 at its Molalla River intake would have been limited to the flow available at the original Trout Creek POD. **Attachment 3** provides a hydrograph and table describing average daily streamflows for the 2023 water year developed by West Consultants.

Expected Total Water Supply

Based on our conversation with the Watermaster and available Molalla River streamgage data, the full rate of 3.0 cfs authorized under Certificate 91537 is expected to be available for diversion year-round. Based on the streamflow data for the 2023 water year collected by West Consultants, the full rate of 4.0 cfs authorized under Certificate 95806 would have been available for diversion from November through June. During the months of October, and July through September an average of 2.68 cfs and a minimum of 1.94 cfs would have been available to divert under Certificate 95806 during that period. Less water would be expected to be available under Certificate 95806 during drier years.

Table 1 shows the total amount of water that would have been available to divert under the City's water rights during the non-peak season (November to June) and when the lowest measured streamflow was recorded in Trout Creek during the 2023 water year. The lowest measured streamflow was recorded on August 15, 2023.

Table 1. Water available to divert during non-peak season and lowest recorded Trout Creek streamflow, 2023 water year.

Water Right Certificate	Rate available to divert (cfs)	
	Non-peak season (November-June)	Lowest measured Trout Creek streamflow (August 15)
91537	3.0	3.0
95806	4.0	1.94
Total	**7.0**	**4.94**

Feasibility to Change Authorized Points of Diversion to New Intake Location

GSI evaluated the feasibility of changing the authorized PODs for Certificates 91537 and 95806. The evaluation considered four potential scenarios for moving the authorized PODs: 1) retaining the 1997 intake location, 2) moving the intake to the City's 1992 intake location; 3) adding points of diversion to authorize

diversion at both the 1992 and 1997 intake locations; and 4) moving to a collector well or riverbank filtration well. Changing a water right certificate's authorized POD requires submission of a water right transfer application to OWRD, and agency approval of the application. OWRD reviews transfer applications to determine whether the proposed change would cause "enlargement" of the water right (expansion of the water use) or injury to existing water rights (prevent other water rights from obtaining water to which they are entitled).

Retaining the 1997 Intake Location

The authorized POD described in Certificate 91537 is located approximately 400 feet upstream of the City's 1997 intake, and the authorized POD described in Certificate 95806 is located approximately 30 feet downstream of the City's 1997 intake. As described above, the POD locations described in the water rights appear to reflect mapping errors or discrepancies., and OWRD did not express concerns about the discrepancies in a recent communication regarding the POD locations. Accordingly, if the City decided to locate its new intake at the same location as the 1997 intake, OWRD would be expected to not require a water right transfer to change the authorized points of diversion for the City's water rights.

Although the POD location discrepancy for Certificate 95806 is negligible, the discrepancy in POD location for Certificate 91537 is a little more significant. Although OWRD has suggested that a transfer "most likely isn't necessary" if the point of diversion was changed due to channel migration, the City could elect to file a transfer application for Certificate 91537 to correct the discrepancy. GSI anticipates that OWRD would approve a water right transfer to move this POD downstream from the location described in the water right to the location of the 1997 intake. OWRD would be expected to find that the change would not cause enlargement of the right. Additionally, the agency generally finds that transfers to move an authorized POD downstream do not cause injury, because moving an authorized POD downstream would not prevent other water rights, including the instream water right, from receiving water to which they are entitled.

Moving the Intake to the 1992 Intake Location

GSI also evaluated, from a water rights perspective, the opportunity to construct the new intake at the location of the City's 1992 intake. The 1992 intake location is approximately 130 feet upstream from the authorized POD for Certificate 95806 and approximately 300 feet downstream from the authorized POD for Certificate 91537. GSI understands these are fairly short distances, but OWRD's official position has been that any change to an intake location should generally be authorized through a water right transfer. In practice, however, OWRD's local watermasters often do not raise concerns about minimal changes to POD locations. (As noted in OWRD's recent communication, the agency also does not require a transfer if the change in point of diversion is within certain limits and is intended to follow channel migration.) Further, GSI is not aware of OWRD raising any concerns when the City changed the location of its intake from the 1992 location to the 1997 location.

If the City chose to err on the side of caution and ensure against any future challenges to its authorized points of diversion, it could file a transfer application to change the authorized points of diversion to the location of the 1992 intake. This transfer would entail a downstream POD transfer for Certificate 91537 and an upstream POD transfer for Certificate 95806. As described above, GSI anticipates that OWRD would approve a downstream transfer for Certificate 91537 because the change would not injure other existing water rights or cause enlargement of the water right.

The upstream point of diversion transfer for Certificate 95806 would, however, be more complex. Although OWRD would be expected to find that an upstream POD transfer would not cause enlargement of the right, the agency would likely find that moving the POD upstream would cause injury to the instream water right that

protects water instream in the subject reach on the Molalla River (Certificate 72587).[2] The instream water right on the Molalla River is not always met and the City's water rights are senior in priority to the instream water right. For this reason, OWRD would find that moving the POD for Certificate 95806 upstream would cause the instream water right to receive less water in the reach between the currently authorized POD and the 1992 intake location. Accordingly, OWRD would be expected to find that this change would cause injury to the instream right.

If OWRD finds that a transfer will cause injury and this issue is not resolved, OWRD will deny the transfer. A finding of injury can, however, be resolved through a "consent to injury" process. Through this process the City could seek the approval of the Oregon Department of Fish and Wildlife (ODFW) for consent to injury to the instream water right. To consent to injury to an instream water right, ODFW requires that the applicant provide mitigation to offset the injury. ODFW determines the type of mitigation required based on habitat type and a net benefit analysis. Typically, ODFW seeks to have water legally protected instream to provide a net benefit, which can entail changing a portion of the water right to be transferred to protect water instream. Although this process exists, it can be challenging to meet ODFW's requirements for approval of a consent to injury. If successful in obtaining consent to injury from ODFW, OWRD would be expected to approve the requested upstream POD transfer for Certificate 95806.

Adding PODs to Authorize Diversion at Both the 1992 and 1997 Intake Locations

The third alternative evaluated is for the City to have intakes at both the 1992 and 1997 intake locations. The water rights evaluation for this alternative is similar to a combination of the two previous alternatives.

For Certificate 95806, the 1997 intake location is essentially the same as the certificate's authorized POD, and OWRD would be expected to not require a water right transfer. Similarly, the 1992 intake location is very close to the certificate's authorized POD, but OWRD's official position is that a water right transfer would generally be required to change the POD location. Since the 1992 POD is located upstream from the certificate's authorized POD, the requested additional upstream POD would be expected to result in a finding of injury. This injury determination would have to be resolved through a consent to injury process with ODFW, which can be challenging, as described above.

For Certificate 91537, the 1992 and 1997 intake locations are both downstream from the certificate's currently authorized point of diversion. The City could change this certificate to identify both of these locations as authorized points of diversion. Since both locations are downstream from the water right's currently authorized POD location, OWRD would be expected to find that the requested changes would not cause injury or enlargement and to approve the transfer application.

Transfer to Collector or Riverbank Filtration Well

To authorize appropriation of water under Certificates 91537 and 95806 from a collector well or riverbank filtration well, the City would apply for a surface water to groundwater transfer. OWRD can approve a surface water to groundwater POD transfer if the change will not cause injury or enlargement, the new well would appropriate groundwater from an aquifer that is hydraulicly connected to the authorized surface source, and the proposed change in POD would affect the surface water source "similarly" to the authorized POD. To meet the "similarly" test, OWRD would need to determine that use of groundwater from the proposed well would result in stream depletion of at least 50 percent of the rate of appropriation within 10 days of continuous pumping.

OWRD will assess injury and enlargement in the same manner as described in the surface water POD transfer scenarios detailed above. (If the well is located downstream of the authorized POD, OWRD would not be

[2] GSI is aware that OWRD indicated in a recent communication with the City that moving the point of diversion upstream "will not affect" the instream water right," however, GSI believes that statement was in error and that the agency would find that the change would cause injury.

expected to find injury or enlargement; if the well is located upstream of the authorized POD OWRD would be expected to find injury.) OWRD determines hydraulic connection to the surface source by reviewing local geology and assesses whether the source affects the surface source "similarly" using the Hunt Model for stream depletion from groundwater pumping. OWRD also requires that a geologist report be submitted as part of a surface to groundwater POD transfer application if the new point of appropriation is located more than 500 feet from the surface water source or more than 1,000 feet up or down stream of the authorized POD. To assess whether OWRD would be expected to approve a surface water to groundwater transfer, GSI would need to do a hydrogeologic assessment of local geology, identify a suitable location for a well (or series of wells), and then assess whether OWRD would be expected to find that a proposed surface water to groundwater change would meet the "similarly" review criteria.

It should be noted that OWRD only allows changes in PODs through the surface water to groundwater transfer process. In other words, the original POD cannot be retained if the entirety of the water right was included in the transfer. A transfer application could, however, include a request to move the authorized PODs to a new surface water intake and a collector or riverbank filtration well.

Summary

The City holds water right Certificates 91537 and 95806, which authorize use of up to a total of 7.0 cfs from the Molalla River for municipal use.

- Certificate 91537 authorizes the use of up to 3.0 cfs and this rate is expected to be available for use year-round.
- Certificate 95806 authorizes the use of up to 4.0 cfs, but this rate is limited to the amount of water available at the original POD on Trout Creek. Based on gage data provided to GSI for the 2023 water year, the City would have been able to divert less than 4.0 cfs for 98 days during the months of October, and July through September. The lowest rate the City would have been able to divert under Certificate 95806 during this period was 1.94 cfs.

GSI assessed the opportunity to retain the 1997 intake location, move the intake to the City's 1992 intake location, add points of diversion to authorize diversion at both the 1992 and 1997 intake locations, and move the intake to a collector well or riverbank filtration well.

- **Retain 1997 intake location**: If the City decided to locate its new intake at the same location as the 1997 intake, OWRD would be expected to not require a water right transfer to change the authorized points of diversion for the City's water rights. The City could, however, elect to correct the POD location discrepancy for Certificate 91537 by filing a water right transfer to move this POD downstream. (The discrepancy between the 1997 intake location and the authorized POD for Certificate 95806 is negligible.)
- **Move to 1992 intake location**: The differences in the City's authorized POD locations and the 1992 intake location are minimal, but OWRD's official position is that changes to points of diversion should generally be approved through a water right transfer. If the City chose to file a water right transfer to move the Certificate 91537 POD downstream, GSI anticipates that OWRD would approve the transfer. If the City chose to file a transfer application to move the POD for Certificate 95806 upstream, OWRD would be expected to find that the requested change would cause injury to the instream water right on the Molalla River. OWRD will deny a transfer if it will result in injury. Approval of the transfer could be possible if the City was able to obtain a consent to injury from ODFW by providing mitigation, but this process can be challenging.
- **Authorize diversion at both the 1992 and 1997 intakes**: The City could file a water right transfer to add the 1992 intake location to Certificate 95806 and add the 1992 and 1997 intake locations to Certificate 91537. The 1992 POD is located upstream of the Certificate 95806 authorized POD and the requested additional upstream POD would be expected to result in a finding of injury. OWRD will

deny a transfer if it will result in injury. This injury determination would have to be resolved through a consent to injury process with ODFW, which can be challenging. For Certificate 91537, the 1992 and 1997 intake locations are both downstream from the certificate's currently authorized point of diversion. OWRD would be expected to approve a transfer to add these PODs to Certificate 91537.

- **Move to collector well or riverbank filtration well:** A surface water to groundwater POD transfer to a new downstream collector or riverbank filtration well may be an option for the City but is contingent on the location of the well and local hydrogeologic conditions, which have not been evaluated. If a location for a suitable collector well or riverbank filtration wells could be identified that meets OWRD's review criteria, a water right transfer could be filed to change the City's authorized PODs to the new well(s) and to a new surface water POD. (The existing authorized PODs could not be retained if the entire water right was included in the transfer.) To provide a complete analysis of whether a surface to groundwater transfer is feasible, a hydrogeologic assessment of the area needs to be completed to identify a potential location for a collector well or riverbank filtration well. Once a site has been identified and characterized, injury and enlargement, hydraulic connection, and whether the proposed well effects the source "similarly" can be assessed.

Attachment 1

Water Rights Table

City of Molalla Water Rights Table

Application	Permit	Certificate	Priority	Source	Use	Authorized Rate (cfs)	Notes	Link to WRIS
S-29401	S-23158	91537	8/17/1954	Molalla River	Municipal	3.0	-	Link
S-7783	S-4980	95806	3/11/1921	Trout Creek	Municipal	4.0	-Transfer T-6978 moved the point of diversion authorized by this right downstream from Trout Creek to near the City's intake on the Molalla River. -The City is required to maintain a measuring device with remote access capability at the original Trout Creek point of diversion. -The amount of water available to divert under this water right is limited by the amount of water available at the original Trout Creek diversion.	Link
					Total	**7.0**		

Attachment 2

Water Right Certificates

STATE OF OREGON

COUNTY OF CLACKAMAS

CERTIFICATE OF WATER RIGHT

THIS CERTIFICATE ISSUED TO

CITY OF MOLALLA
PO BOX 248
MOLALLA OR 97038

confirms the right to the use of water perfected under the terms of Permit S-23158. The amount of water used to which this right is entitled is limited to the amount used beneficially, and shall not exceed the amount specified, or its equivalent in the case of rotation, measured at the point of diversion from the source. The specific limits and conditions of the use are listed below.

APPLICATION FILE NUMBER: S-29401

SOURCE OF WATER: MOLALLA RIVER, A TRIBUTARY OF WILLAMETTE RIVER

PURPOSE OR USE: MUNICIPAL USE

MAXIMUM RATE: 3.0 CUBIC FEET PER SECOND

DATE OF PRIORITY: AUGUST 17, 1954

The point of diversion is located as follows:

Twp	Rng	Mer	Sec	Q-Q	DLC	Measured Distances
5 S	2 E	WM	22	NE NE	51	508.4 FEET SOUTH AND 725.3 WEST FEET FROM NE CORNER, SECTION 22

A description of the place of use is as follows:
WITHIN THE CITY LIMITS OF THE CITY OF MOLALLA AND IMMEDIATE VICINITY

The right to the use of the water for the above purpose is restricted to beneficial use on the lands or place of use described; however, water may be applied to lands which are not specifically described above, provided the holder of this right complies with ORS 540.510(3).

Issued JUL 05 2016.

Dwight French
Water Right Services Division Administrator, for
Thomas M. Byler, Director
Oregon Water Resources Department

NOTICE OF RIGHT TO PETITION FOR RECONSIDERATION OR JUDICIAL REVIEW

This is an order in other than a contested case. This order is subject to judicial review under ORS 183.484 and ORS 536.075. Any petition for judicial review must be filed within the 60-day time period specified by ORS 183.484(2). Pursuant to ORS 183.484, ORS 536.075 and OAR 137-004-0080, you may petition for judicial review and petition the Director for reconsideration of this order. A petition for reconsideration may be granted or denied by the Director, and if no action is taken within 60 days following the date the petition was filed, the petition shall be deemed denied. In addition, under ORS 537.260 any person with an application, permit or water right certificate subsequent in priority may jointly or severally contest the issuance of the certificate within three months after issuance of the certificate.

STATE OF OREGON

COUNTY OF CLACKAMAS

CERTIFICATE OF WATER RIGHT

THIS CERTIFICATE ISSUED TO

CITY OF MOLALLA
PO BOX 248
MOLALLA OR 97038

confirms the right to use the waters of TROUT CREEK, a tributary of MOLALLA RIVER for MUNICIPAL USE.

This right was perfected under Permit S-4980. The date of priority is MARCH 11, 1921.

The amount of water to which this right is entitled and hereby confirmed, for the purposes aforesaid, is limited to an amount actually beneficially used for said purposes, and shall not exceed 4.0 CUBIC FEET PER SECOND.

The point of diversion is located as follows:

Twp	Rng	Mer	Sec	Q-Q	DLC	Measured Distances
5 S	2 E	WM	22	NE NE	51	NEW - SOUTH 54 DEGREES, 51 MINUTES, 45 SECONDS WEST, 356.2 FEET FROM NE CORNER, SECTION 22

A description of the place of use is as follows:

WITHIN THE CORPORATE LIMITS OF THE CITY OF MOLALLA, OREGON, AND ALONG THE PIPE LINES IN T5S, R2E, W.M., IN CLACKAMAS COUNTY, OREGON

The quantity of water diverted at the new point of diversion shall not exceed the quantity of water lawfully available at the original point of diversion described as follows:

Twp	Rng	Mer	Sec	Q-Q	Measured Distances
6 S	3 E	WM	6	SE SE	NORTH 35 DEGREES, 30 MINUTES WEST, 810 FEET FROM SE CORNER, SECTION 6

The water user shall maintain a headgate, an in-line flow meter, weir, or other suitable device for measuring and recording the quantity of water diverted.

The water user shall maintain a suitable measuring device, including the capability for remote access of data, for measuring and recording the quantity of water available at the old point of diversion.

The water user shall operate and maintain the headgate and measuring devices, as needed. The water user shall report total flow figures when requested by the Watermaster. The Watermaster may operate the headgate and monitor the accuracy of the measuring devices, as needed.

Water shall be acquired from the same surface water source as the original point of diversion.

NOTICE OF RIGHT TO PETITION FOR RECONSIDERATION OR JUDICIAL REVIEW

This is an order in other than a contested case. This order is subject to judicial review under ORS 183.482. Any petition for judicial review must be filed within the 60-day time period specified by ORS 183.482. Pursuant to ORS 183.482, ORS 536.075 and OAR 137-003-0675, you may petition for judicial review and petition the Director for reconsideration of this order. A petition for reconsideration may be granted or denied by the Director, and if no action is taken within 60 days following the date the petition was filed, the petition shall be deemed denied.

The right to the use of the water for the above purpose is restricted to the lands or place of use described.

This certificate is issued to confirm a change in POINT OF DIVERSION approved by an order of the Water Resources Director entered SEPTEMBER 7, 1999, at Special Order Volume 53, Page 1217, approving Transfer Application T- 6319, supersedes Certificate 7202, State Record of Water Right Certificates.

Issued JUL 2 3 2021.

Dwight French
Water Right Services Division Administrator, for
Thomas M. Byler, Director
Oregon Water Resources Department

Attachment 3

Trout Creek Hydrograph and Average Daily Streamflows

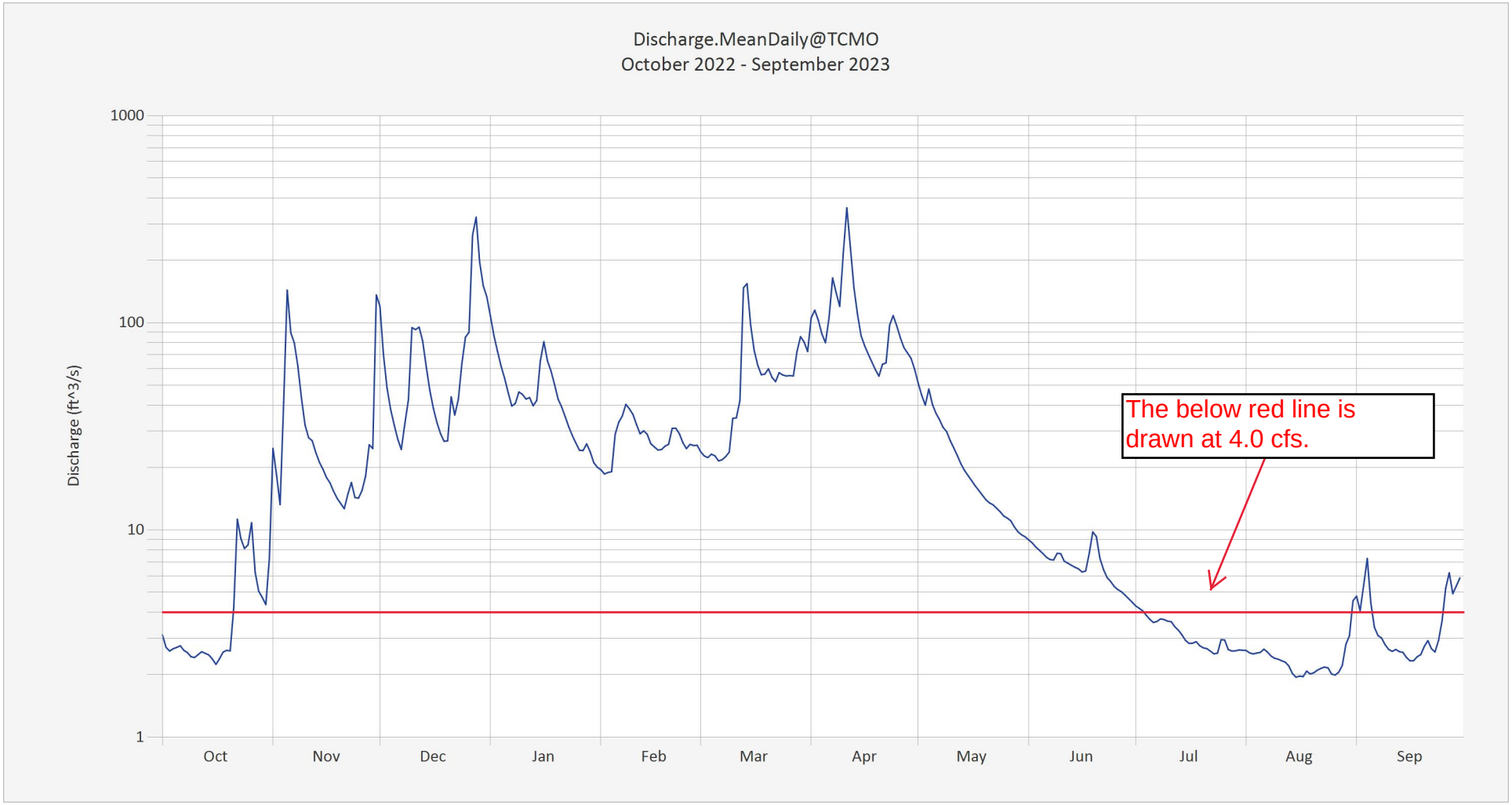
Time Series Plot

2023 Water Year

Mar 7, 2024 | 1 of 1
Period Selected: 2022-10-01 00:00 - 2023-09-30 23:59

Source Data: Discharge.MeanDaily@TCMO, Trout Creek near Molalla, OR
UTC Offset: -08:00, Start Time: 2019-08-15 00:00:00, End Time: 2024-03-05 00:00:00

Units: ft^3/s



USGS Daily Mean

2023 Water Year

Period Selected: 2022-10-01 00:00 - 2023-09-30 23:59

Source Data: Discharge.MeanDaily@TCMO, Trout Creek near Molalla, OR
UTC Offset: -08:00, Start Time: 2019-08-15 00:00:00, End Time: 2024-03-05 00:00:00

Units: ft^3/s
Data Coverage Threshold: 80%

Oct 2022 - Sep 2023 Cal Year 2022: Total: 16600 Mean: 45.3 Max: 454 Min: 2.24 Ac-Ft: 32900 WY: Total: 12100 Mean: 33.1 Max: 359 Min: 1.94 Ac-Ft: 23900

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	3.11	24.7	120	108	19.5	23.8	106	51.2	8.95	4.30	2.62	4.78
2	2.71	18.4	70.1	86.6	18.6	22.7	115	44.7	8.66	4.19	2.55	4.07
3	2.60	13.2	48.5	72.7	18.9	22.3	103	40.0	8.27	4.07	2.52	5.41
4	2.67	41.2	38.3	61.7	19.1	23.2	88.2	47.9	7.98	3.87	2.54	7.28
5	2.71	144	32.2	53.8	28.9	22.8	80.1	40.4	7.69	3.70	2.56	4.45
6	2.76	89.5	27.5	45.9	33.1	21.5	105	36.6	7.38	3.57	2.66	3.39
7	2.62	79.8	24.4	39.6	35.5	21.8	165	34.0	7.19	3.61	2.57	3.09
8	2.56	61.4	32.6	40.8	40.4	22.6	140	31.3	7.15	3.72	2.46	3.01
9	2.44	43.1	42.6	46.3	38.4	23.7	120	29.8	7.71	3.69	2.40	2.79
10	2.42	32.1	94.7	45.1	36.1	34.6	217	27.0	7.68	3.63	2.38	2.65
11	2.50	27.9	92.7	42.8	32.2	34.7	359	24.9	7.05	3.61	2.33	2.59
12	2.58	27.0	95.3	43.5	29.1	42.1	230	22.8	6.91	3.41	2.30	2.65
13	2.53	23.7	81.5	39.7	30.1	148	147	20.8	6.75	3.28	2.20	2.59
14	2.49	21.3	61.3	42.2	28.9	154	109	19.4	6.60	3.12	2.03	2.56
15	2.38	19.7	47.2	65.3	26.1	97.8	86.5	18.3	6.48	2.93	1.94	2.42
16	2.24	17.9	38.6	81.0	25.1	73.5	77.4	17.3	6.26	2.83	1.97	2.33
17	2.39	16.9	33.0	65.5	24.3	62.4	70.6	16.3	6.33	2.84	1.96	2.34
18	2.57	15.4	29.2	58.5	24.4	56.1	64.8	15.5	7.70	2.89	2.08	2.44
19	2.62	14.2	26.8	50.3	25.4	56.5	59.4	14.7	9.78	2.76	2.02	2.50
20	2.61	13.4	26.9	42.7	25.9	59.9	55.2	14.0	9.29	2.69	2.04	2.74
21	4.22	12.7	43.9	39.2	30.9	54.5	63.0	13.5	7.29	2.67	2.10	2.92
22	11.3	14.8	35.8	35.1	31.0	52.0	64.0	13.2	6.44	2.60	2.15	2.67
23	9.07	16.9	42.6	31.4	29.2	57.4	97.4	12.7	5.89	2.52	2.18	2.57
24	8.13	14.3	63.5	28.5	26.3	56.0	108	12.2	5.64	2.54	2.16	2.93
25	8.46	14.2	85.2	26.2	24.7	55.3	96.6	11.7	5.33	2.95	2.01	3.65
26	10.8	15.5	89.9	24.2	25.9	55.6	84.7	11.4	5.15	2.94	1.99	5.22
27	6.25	18.2	265	24.2	25.5	55.3	76.0	11.1	5.03	2.64	2.06	6.21
28	5.06	25.8	323	26.0	25.6	72.5	71.5	10.3	4.85	2.60	2.22	4.92
29	4.72	24.7	195	23.8		85.7	67.4	9.79	4.66	2.61	2.80	5.37
30	4.36	136	151	21.1		80.7	59.8	9.47	4.48	2.63	3.09	5.87
31	7.33		133	20.1		72.6		9.26		2.63	4.55	
Total	131	1040	2490	1430	779	1720	3290	692	207	98.0	73.4	108
Mean	4.23	34.6	80.4	46.2	27.8	55.5	110	22.3	6.89	3.16	2.37	3.61
Max	11.3	144	323	108	40.4	154	359	51.2	9.78	4.30	4.55	7.28
Min	2.24	12.7	24.4	20.1	18.6	21.5	55.2	9.26	4.48	2.52	1.94	2.33
Ac-Ft	260	2060	4940	2840	1540	3410	6520	1370	410	194	146	215

APPENDIX C. HYDRAULIC MODELING SUMMARY

All good (DK)

TETRA TECH

Technical Memorandum

To:	Gordon Munro, PE
From:	Alex Buescher, PE; Kimberly Sanderford, EIT
Date:	March 14, 2025
Subject:	City of Molalla Drinking Water Intake – Existing conditions in the Molalla River channel and floodplain in the project vicinity

This technical memorandum documents the existing conditions of the Molalla River channel and floodplain in the subject-line project limits in the following sections, figures, and tables:

CONTENTS

Tetra Tech, Inc

1750 South Harbor Drive, Suite 400, Portland, OR 97201

Tel 503.221.8636 tetratech.com

FIGURES

TABLES

1.0 INTRODUCTION

The City of Molalla, Oregon (the City) is proposing upgrades to a drinking water supply intake between River Mile (RM) 22.6 and RM 22.5 on the Molalla River which is currently the sole source drinking water supply for the City (City of Molalla, 2021).

A water intake was originally installed in 1992, but due to extensive damage during a flood in February of 1996 it was replaced with a temporary intake later in 1996 (City of Molalla, 2021). The 1992 intake pipe and bar-screen were removed, but the excavated area where the intake was located remains as a significant depression in the channel, with a rock weir about 75 feet downstream that controls the water surface elevation in the depression. The 1996 intake is located approximately 130 feet to the northeast and downstream of the 1992 intake (**Figure 1**).

A bathymetric survey was conducted as part of this project to characterize the Molalla River channel surrounding the area of interest for a new intake (PACE, 2024). Important features characterized by the bathymetric survey include: the original depression of the 1992 intake, the depression housing the existing intake structure, and the extents of an in-channel gravel bar between RM 22.7 and RM 22.5 on the Molalla River. The survey was supplemented by available Light Detection and Ranging (LiDAR) data to characterize the floodplain topography (DOGAMI, 2009).

This technical memorandum documents the evaluation of the Molalla River hydraulics under existing conditions in the project study area, defined by the limits of the bathymetric survey (**Figure 1**), in the following flow scenarios:

- **High-flow scenarios**
  - 50% chance annual exceedance (2-year return period)
  - 4% annual chance exceedance (25-year return period)
  - 2% annual chance exceedance (50-year return period)
  - 1% annual chance exceedance (100-year return period)
- **Summer Low-flow scenarios**
  - 10% chance exceedance in summer months
  - 25% chance exceedance in summer months
  - 50% chance exceedance in summer months

High and low flows are then scaled by basin size to flows at an existing United States Geological Survey (USGS) gage and combined with bathymetric and terrain data to inform a one-dimensional (1D) hydraulic model of the project area. Further details on hydrology, topography, and the hydraulic model are in Section 3 Hydrology and Section 4 Hydraulic Modeling.

The project includes elements located within the Federal Emergency Management Agency's (FEMA) Special Flood Hazard Area (SFHA) AE, with the intake structure located within the regulatory floodway, shown on FEMA Flood Insurance Rate Map (FIRM) panel 41005C0545D (Appendix A).

The hydraulic modeling results presented in this memorandum are intended to support the design of a new intake and associated infrastructure. The results of this analysis should not be used for the purposes of floodplain mapping.

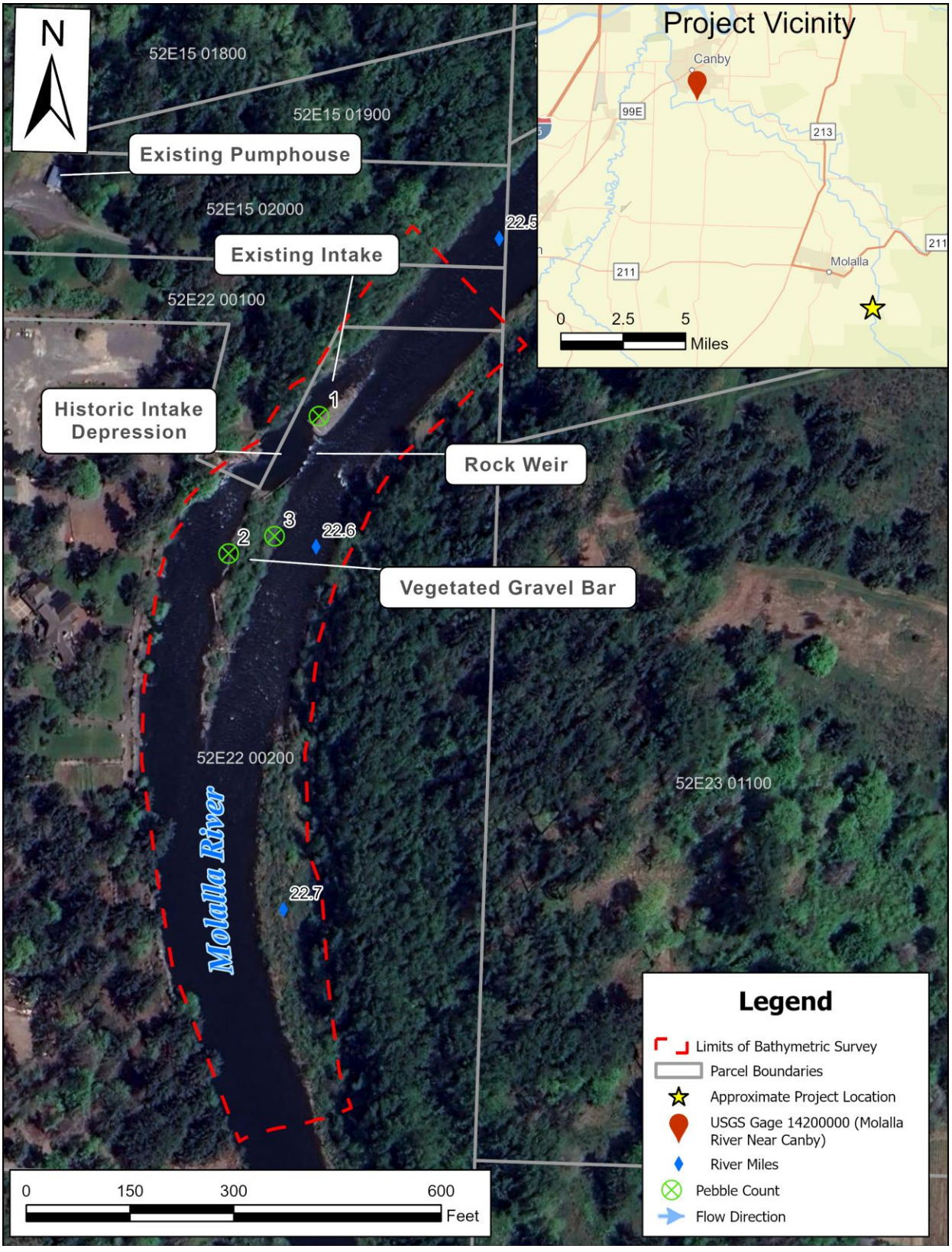


Figure 1: Project Location and Vicinity

2.0 EXISTING SITE CONDITIONS

The proposed intake project area is on the left bank (west side) of the Molalla River, about 1.5 miles southeast of the city limits of Molalla within Clackamas County, Oregon. The main river channel is approximately 150 feet wide in the directly upstream reach, with the FEMA Regulatory Floodway typically about 1,200 feet wide fringed with 100-year floodplain extending an additional 500 feet to either side (FEMA, 2008) (**Figure 5**). An in-channel, vegetated gravel bar splits the Molalla River into two distinct channels at a bend in the channel. The existing intake structure is located near the northwestern, or downstream, end of this gravel bar (**Figure 1**).

Historical modifications of the main channel and floodplain within the project vicinity include conversion of surrounding areas to agriculture, diversion of waters of the river for irrigation and other use, and residential and commercial developments within or near the upstream and downstream mapped floodplain. There are bridge crossings of the channel approximately 0.75-miles upstream at South Molalla Forest Road, and approximately one mile downstream at South Feyrer Park Road. Waters that historically flowed in several side channels west of the main channel, as visible in aerial imagery from 1952 and 1964 (USGS, 2024), are now detained for use on private property and these side-channels are likely not activated except at the highest flows or through artificial control of the property owners.

There are two residential (single family dwelling) structures within the FEMA mapped 100-year floodplain near the project area west of the Molalla River, one residential structure within the FEMA mapped 500-year floodplain east of the river, and an additional structure adjacent to but outside of any FEMA mapped floodplain zone east of the river that FEMA has mapped as a structure larger than 450 square feet for use in Flood Insurance Mitigation and Emergency Preparedness Response (FEMA, 2023). All four structures are located upstream of the project area (**Figure 5**).

3.0 HYDROLOGY

Hydrologic conditions are defined through analysis of publicly available observed data recorded at the USGS Molalla River at Canby gage (Canby Gage), Gage 14200000, located at RM 6.3 on the Molalla River (**Figure 1** inset). The United States Army Corps of Engineers (USACE) Hydrologic Engineering Center's Statistical Software Package (HEC-SSP) software version 2.3 was utilized to perform the high and low flow analyses of hydrologic data from the Canby Gage (USACE, 2023). A flow frequency analyses based on Bulletin 17C (England, et al., 2018). was performed to estimate the high flow scenarios, and a quarterly flow-duration analysis was performed to estimate the low flow scenarios.

3.1 HIGH FLOW SCENARIOS

The 2-, 25-, 50-, and 100-year return period storms were selected as the hydrologic events of interest to characterize river hydraulics under existing conditions. The Bulletin 17C analysis was performed using streamflow data from the Canby Gage which is approximately 16 miles downstream of the project site. Molalla River flows ranged from approximately 13,370 CFS to 35,510 cubic feet per second (CFS) at this gage (**Figure 2**).

The contributing drainage area at the Canby Gage is approximately 122 square miles larger than the contributing drainage area to the project site, and streamflow data from the Canby Gage will significantly overestimate flows at the project site without correction. To develop streamflow statistics representative of the project area, the streamflow statistics computed for the Canby Gage were scaled by the ratio of the total contributing drainage area draining to the Canby gage to the total contributing drainage draining to the existing intake structure point on the Molalla River. The contributing drainage areas were delineated using the USGS StreamStats tool (USGS, 2024). The resulting scaled flows (**Table 1**) are then used as the upstream boundary conditions in the 1D model to forecast hydraulic properties (water surface elevations, depths, and velocities) of the Molalla River at the project site.

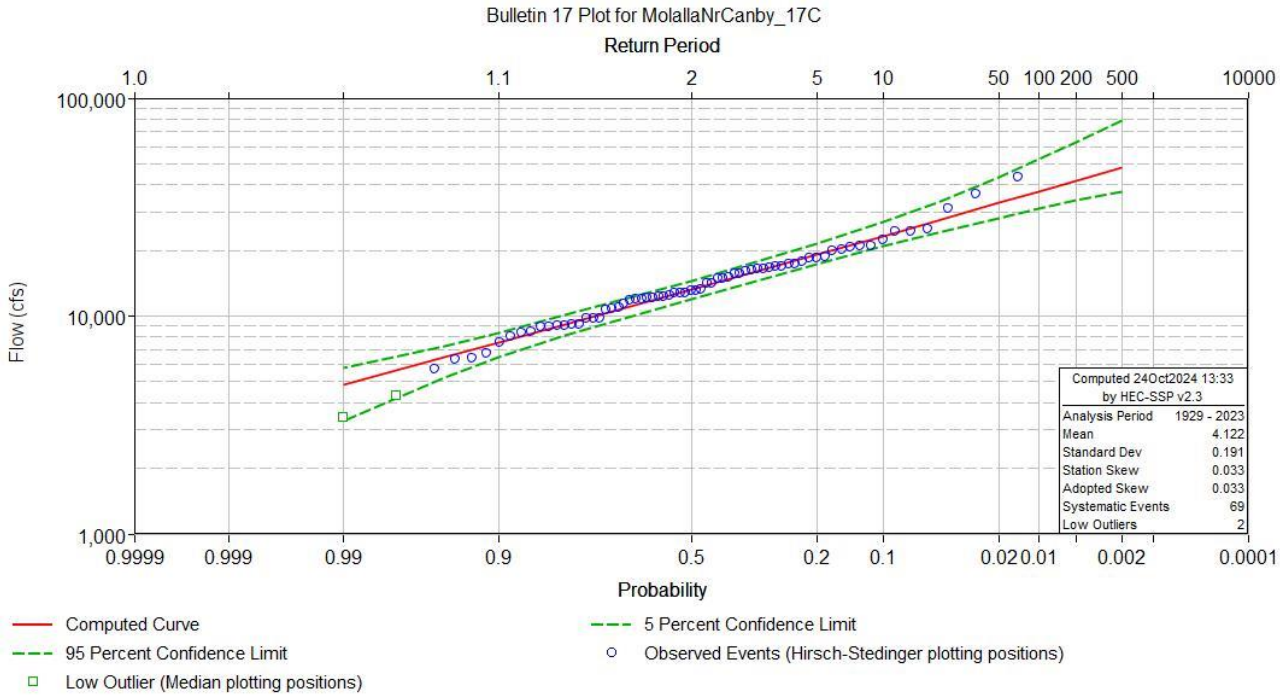


Figure 2: Bulletin 17C Plot for Molalla at Canby USGS Gage

Table 1: High Flow Scenarios Estimated from Bulletin 17C Analysis

Location	Contributing Drainage Area (square miles)	2-Year Event (cfs[1])	25-Year Event (cfs[1])	50-Year Event (cfs[1])	100-Year Event (cfs[1])
Molalla River at Canby Gage	325	13,214	29,287	32,977	37,292
Existing City of Molalla intake structure	203	8,253	18,293	20,598	23,293

[1]Cubic feet per second

3.2 LOW FLOW SCENARIOS

For the low flow scenarios, a quarterly duration analysis was used to separate the low-flow exceedance probabilities for only the summer months: July, August, and September (Figure 3). The summer quarter was selected because this is when flows are expected to be the lowest. The 10%, 25%, and 50% exceedance probability flows during the summer quarter were selected for the low flow analysis to characterize river hydraulics at the lowest expected flows in the project area. Low flows estimated from the Canby Gage quarterly duration analysis were then scaled by contributing basin area as described for the high flow scenarios. Estimated low flows at the project area range from 59 cfs to 161 cfs (Table 2).

The Table 2 values represent the probability during the months of July through September that the associated flow value is expected to be equaled or exceeded. For example, at the existing intake, the 10% exceedance probability flow is 161 cfs; in other words, summer low flows have a 90% probability of being less than 161 cfs (**Table 2**).

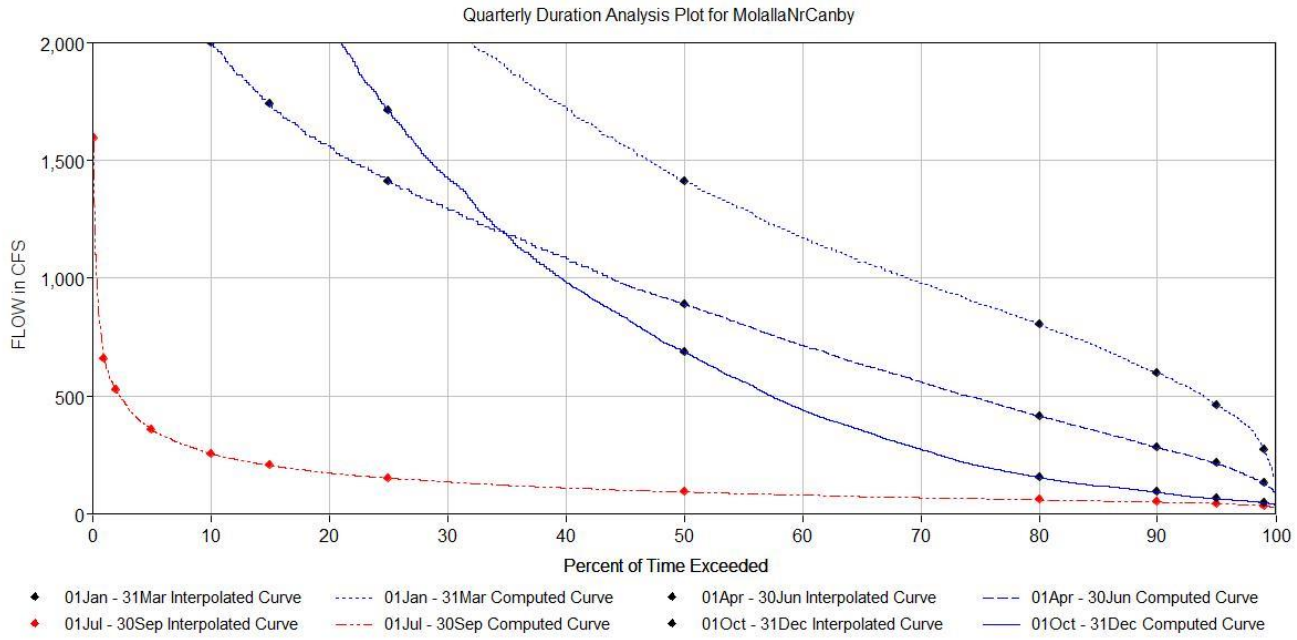


Figure 3: Quarterly Duration Analysis for Molalla at Canby USGS gage

Table 2: Low Flow Scenarios Estimated from Quarterly Duration Analysis

Location	Drainage Basin size (square miles)	10% Exceedance Low Flow (cfs)	25% Exceedance Low Flow (cfs)	50% Exceedance Low Flow (cfs)
Molalla River at Canby gage	325	258	154	94
Existing City of Molalla intake structure	203	161	96	59

3.3 FEBRUARY 1996 FLOOD ANALYSIS

Though no discharge data were available for the USGS gage Molalla River near Canby for the January/February 1996 flood event, when the intake was previously damaged, NOAA reports that the peak 1996 flood stage height at the Molalla near Canby gage was 24.6 feet (NOAA, 2024). Based on the USGS rating curve for the Molalla River at this gage, a 24.6-foot stage height is equivalent to a discharge of 31,500 CFS (USGS, 2024). At that discharge, the 17C analysis for this same gage indicates that the 1996 flood event was between the 25-year and 50-year events for this basin. Using the same scaling method as for the high and low flow scenarios based on data from the Molalla River near Canby gage, the 1996 discharge at the Project site was approximately 19,700 CFS, also between the 25-year and 50-year events at the existing intake (**Table 1**).

4.0 HYDRAULIC MODELING

The USACE Hydrologic Engineering Center's River Analysis System (HEC-RAS) software version 6.6 was used to analyze the river hydraulics (USACE, 2024). A 1D, steady-state analysis was performed for a looped geometry model which represents both river channels that form around the vegetated island. The Shallow Water equations are applied everywhere in the analysis except at the rock weir, where the weir equation is applied, and at the downstream junction where the two channels come together, where an energy balance method is applied.

4.1 TOPOGRAPHIC DATA

A bathymetric survey, performed by PACE Engineers in September 2024, was conducted near the existing outfall, with specific focus on ten bathymetric cross-sections identified by Tetra Tech staff in the field to represent channel bottom conditions most accurately for the entire reach to be modeled (PACE, 2024). Topographic data beyond the extents of the survey were obtained from aerial LiDAR ground survey data accessed through the Oregon Department of Geology and Mineral Industries' (DOGAMI's) public geospatial data services (DOGAMI, 2009). Retrieved LiDAR data was flown in 2009 with a reported median relative vertical accuracy of 0.136-feet (Watershed Sciences, 2009).

The horizontal control of the topographic mapping is based on the North American Datum of 1983 (NAD83) State Plane Oregon North with units of international feet, and the vertical control is based on the North American Vertical Datum of 1988 (NAVD88) in units of feet.

4.2 ROUGHNESS COEFFICIENTS

Manning's roughness coefficients were used to represent the riverbed, banks, and floodplain. Since the nearest active gage is 16-miles downstream (Canby Gage) and required flow scaling, data from this gage was not sufficient for calibration, and using USACE recommended values was determined to be a more reliable estimate of channel roughness than calibration to approximated values. Roughness coefficients were selected based on values from the HEC-RAS Hydraulic Reference Manual (USACE Hydraulic Engineering Center, 2024) *Table 3-1 Manning's n Values*. All coefficients are within the ranges suggested in Table 3-1 for either the river channel or associated floodplain areas (**Table 3**).

Table 3: Suggested and Selected Manning's Roughness Values

Modeled Landscape	Type of Channel	Suggested Manning's Value	Selected Manning's Value
West of Molalla Forest Road[1]	Floodplain; medium to dense brush, in summer	0.070 – 0.160	0.100
Left Overbank	Floodplain; dense willows, summer, straight	0.110 – 0.160	0.120
Main Channel	Main channel; clean, winding, some pools and shoals; some weeds and stones; more ineffective slopes and sections	0.040 – 0.055	0.045
Right Overbank	Floodplain; dense willows, summer, straight	0.110 – 0.160	0.120

[1] This area is required to have a Manning's value applied since cross section 1453 extends 100-feet into this area, but no flow extends west of Molalla Forest Road in all modeled events, so this value is not actively applied in any model calculations

Additionally, three Wolman Pebble Counts were conducted for use in determining the grain size distribution (Wolman, 1954). This process was repeated in a transect parallel to flow until 100 grain sizes were recorded for each count in different parts of the channel chosen to characterize bed material in areas that appeared to have distinct hydraulic properties (**Figure 1**).

4.3 FLOOD MODEL GEOMETRY

The purpose of the existing conditions HEC-RAS model is to assess hydraulic characteristics for high-flow and low-flow events in the Molalla River and its floodplain within the project study area. A looped geometry or split-flow model was selected to represent the area of interest of the Molalla River.

The split flow model utilizes four connected reaches (**Figure 4**):

- Reach 1: Upstream reach, connecting to Junction 1 where the main channel splits into two channels around a vegetated gravel bar.
- Reach 2: Left channel, where existing intake is located.
- Reach 3: Right channel.
- Reach 4: Downstream reach, connecting to Junction 2 where the two channels converge. A split-flow model geometry is required because a 1D model can only represent a single WSE at any given cross section, and in low-flow conditions (as observed and surveyed in the field) Reach 2 and Reach 3 have distinct WSEs, necessitating two separate reaches to best represent low-flows.

Although this model can estimate water surface elevations in high and low flow conditions, the Molalla River floodplain is not engaged at low flows, so ineffective flow areas are used to limit low flow model scenarios to the main channel, corresponding approximately to the field-verified Ordinary High-Water (OHW) line.

4.4 CROSS SECTIONS

Fourteen cross sections derived from the bathymetric survey and surrounding LiDAR terrain were created to thoroughly capture the fluvial hydraulics within the area of proposed work (**Figure 4**, **Table 4**) in the hydraulic model. Cross section naming convention corresponds to river stations as defined by the limits of the bathymetric survey, where station 0+00 is at the downstream most limits of the survey, and station 14+53 is 1,453-feet upstream of station 0+00, at the upstream limits of the survey (**Figure 4**).

The main channel and floodplain of the Molalla River, from its confluence with the Willamette River to approximately 150 feet upstream of the private road southwest of Dickey Prairie Road (RM 23.2, about 0.6 miles upstream from the project) was previously evaluated as part of a FEMA Flood Insurance Study. This data is published in the FEMA FIS 41005CV001A-1C (FEMA, 2008). The entire domain of the subject model for this report is located between FEMA cross sections BN and BM (**Figure 5**).

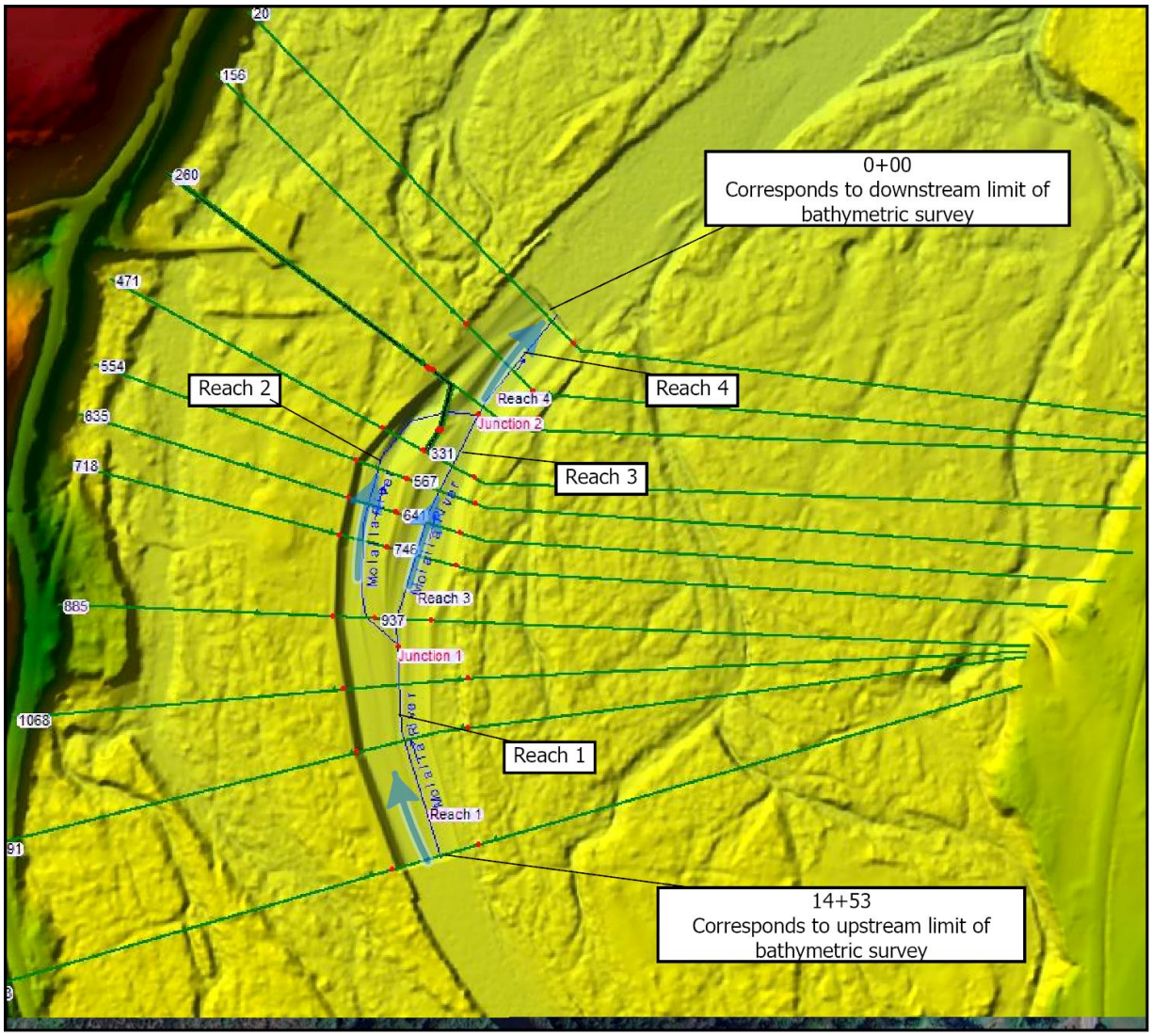


Figure 4: Looped Geometry Molalla River Intake Model

Table 4: Model Cross Section Details

Model Cross Section ID	Reach	Station	Length (feet)	Description
1453	Reach 1	14+53	2372	Upstream most section
1191	Reach 1	11+91	2303	N/A
1068	Reach 1	10+68	2210	Upstream of Junction 1 split
885	Reach 2	8+85	691	Connects to cross section 937 at island high point; downstream of Junction 1

937	Reach 3	9+37	1423	Connects to cross section 885 at island high point; downstream of Junction 1
718	Reach 2	7+18	718	Connects to cross section 746 at island high point
746	Reach 3	7+46	1486	Connects to cross section 718 at island high point
635	Reach 2	6+35	726	Connects to cross section 641 at island high point
641	Reach 3	6+41	1550	Connects to cross section 635 at island high point
554	Reach 2	5+54	725	Connects to cross section 567 at island high point
567	Reach 3	5+67	1590	Connects to cross section 554 at island high point
471	Reach 2	4+71	782	Connects to cross section 331 at island high point upstream of junction 2 split
331	Reach 3	3+31	1573	Connects to cross section 471 at island high point; upstream of junction 2 split
359	Reach 2	3+59	914	Upstream of rock weir
350.5	Reach 2	3+50.5	922	Downstream of rock weir
350	Reach 2	3+50	924	Downstream of rock weir
260	Reach 4	2+60	2346	Downstream of junction 2 split
156	Reach 4	1+56	2358	N/A
20	Reach 4	0+20	2308	Downstream most section

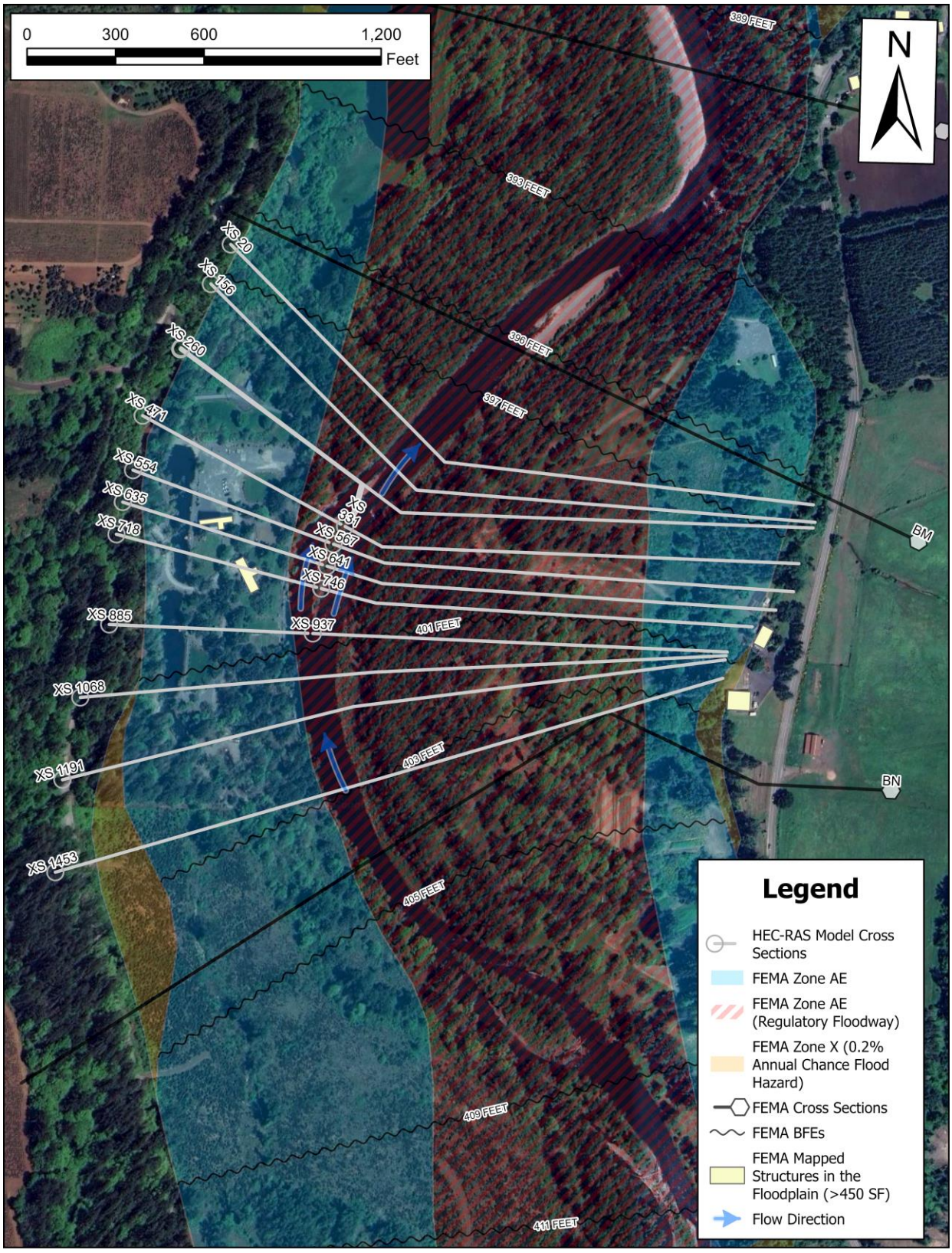


Figure 5: Cross Sections and FEMA Details

Cross sections spanning both Reach 2 and Reach 3 are split at the high ground elevation as surveyed along the vegetated in-channel gravel bar (**Figure 6**). This paired configuration is used to represent both channels with a "single" cross section to effectively compare water surface elevations, depths, and velocities in each of the channels at the same location within the model domain (**Figure 6**). Since the terrain surface was interpolated, the high ground on the island may not be represented accurately at all split cross sections; however, HEC-RAS extends the cross-section end points vertically to contain the computed water surface elevations, effectively representing the boundary along the longitudinal centerline of the island. Because the Molalla River channel curves near the project location, the river stations for the Reach 2 and Reach 3 sections are skewed.

Cross sections are placed to adequately characterize distinct parts of the channel, maintaining appropriate distance between sections to allow computational efficiency in the model. On average, cross sections are under 100-feet apart. Cross sections 359, 350, and 350.5 bound the inline structure representing the existing rock weir and are required by HEC-RAS for systems incorporating inline structures.

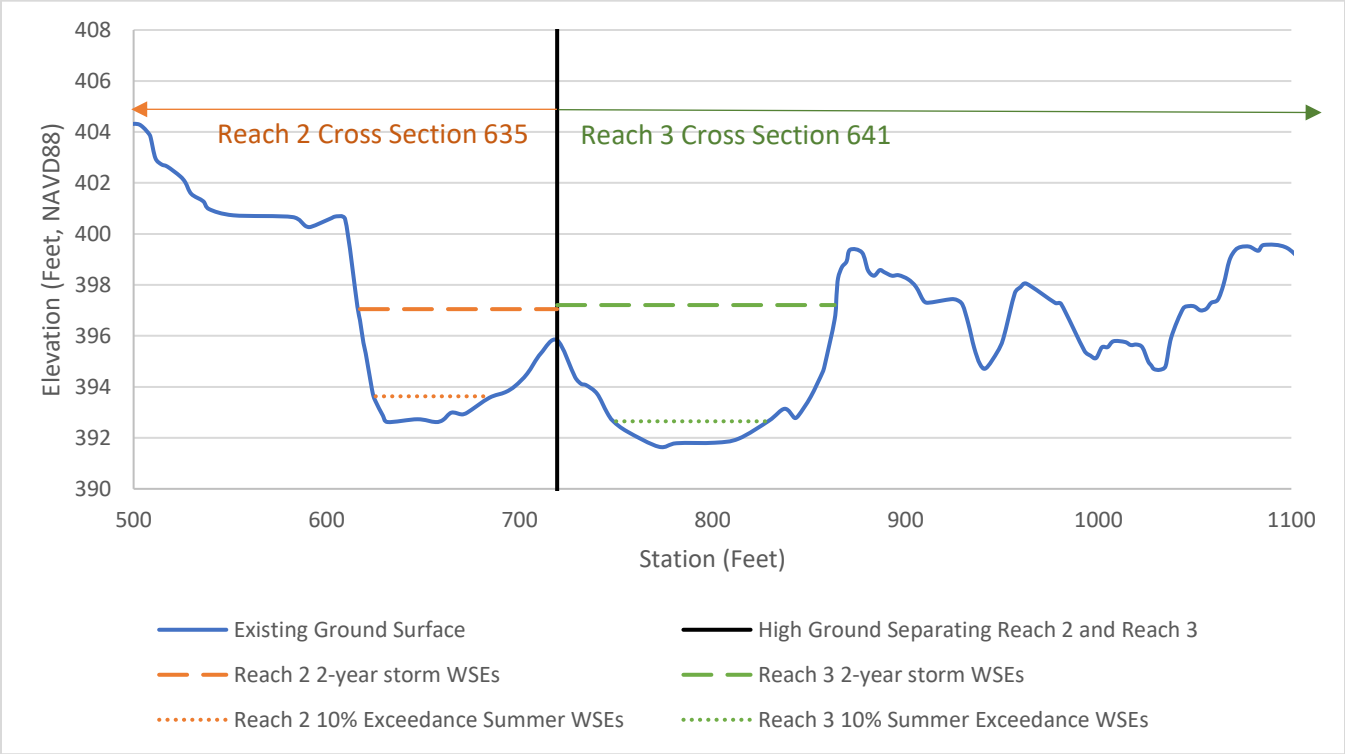


Figure 6: Basic Cross Section Schematic for Reach 2 and Reach 3 High Ground Split

4.5 ROCK WEIR

The existing rock weir is represented in both the model terrain and through use of an inline weir structure in Reach 2 of the model (**Figure 7**). During the field investigation, seven depth measurements were taken along the length of the weir (perpendicular to flow) along both the upstream and downstream sides of the structure, for a total of fourteen field measurements approximating the weir dimensions (**Table 5**, **Table 6**). Field measurements are then used to create an additional set of known elevations in the bathymetric survey using Autodesk Civil3D software, and the weir is added to the surveyed surface terrain file in this way for export to HEC-RAS.

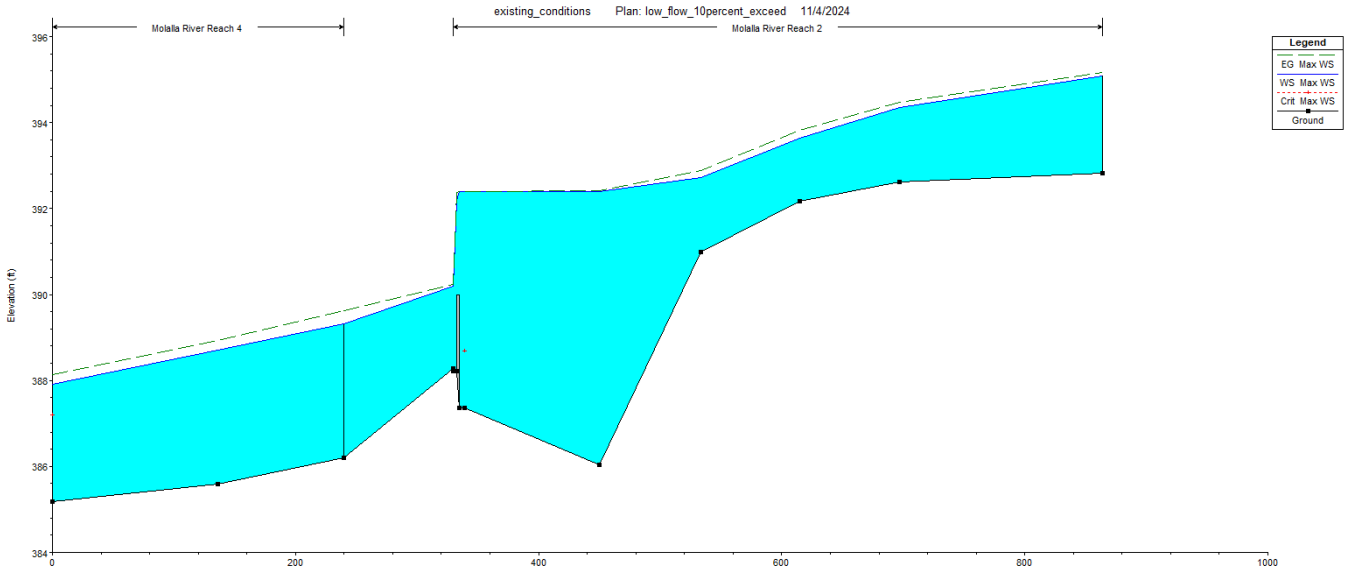


Figure 7: Profile view showing Reach 2 connecting to Reach 4 just beyond the inline weir structure

Table 5: Field Measurements and Calculations of Rock Weir on Headwater Side

Distance from Upstream End of Weir (feet)	Headwater Depth (feet)	Water Surface Elevation (feet, NAVD88)	Bed Elevation (feet, NAVD88)
0	0.0	392.0	392.0
8	0.6	392.0	391.4
19	1.4	391.4	390.0
36	1.5	390.6	389.1
44	0.5	390.5	390.0
52	0.3	391.5	391.2
59	0.0	391.7	391.7

Table 6: Field Measurements and Calculations of Rock Weir on Tailwater Side

Distance from Upstream End of Weir (feet)	Tailwater Depth (feet)	Water Surface Elevation (feet, NAVD88)	Bed Elevation (feet, NAVD88)
0	0.0	391.7	391.7
22	0.4	392.0	391.6
34	0.4	391.6	391.2
41	1.3	388.3	387.0
44	0.4	390.7	390.3
50	0.3	391.6	391.3
58	0.0	391.7	391.7

For additional analysis to examine the impact this rock weir has on channel hydraulics within the project area, a copy of the terrain was also created without the weir structure added to the surface. This copy also removed the inline weir feature and is discussed further in *Section 5.2 Results at the Existing Intake: Without Weir Condition.*

4.6 BOUNDARY CONDITIONS AND CONTROL SETTINGS

The upstream boundary condition is the scaled flow gage data for each of the high and low flow scenarios from the Canby gage. The downstream boundary condition is the average channel slope as derived from the bathymetric survey. All flow scenarios are modeled to run for a duration of 24 hours, with a time step of one second. A one second time step is required due to the proximity of some cross sections as described in *Section 4.3 Flood Model Geometry.*

5.0 RESULTS

Across all flow scenarios and all split cross sections *except* the first one (cross section 885/937) water surface elevations differ between the two reaches due to the existing rock weir, as expected based on field observations. As the split cross sections extend downstream, this difference increases in magnitude except at the split cross section 554/567 which has a smaller difference then both the upstream and downstream split cross sections that bound it (**Table 7**).

At the first split cross section, 885/937, for all flow events up to the 50-year recurrence interval storm, the water surface elevations are the same. For the 50-year and 100-year recurrence interval storm events, at the first split cross section, Reach 2 has a water surface that is 1.59-feet and 1.4-feet, respectively, greater than Reach 3.

Reach 2 cross section 718 has the highest velocity of any reach during the 100-year storm event at 20.0 ft/s (**Table 8**). However, velocities at the two directly upstream cross sections from the existing intake, cross sections 471 and 359 on Reach 2, are 0.1 ft/s in the two lowest flow scenarios, which is the lowest velocity recorded for any model run. While higher velocities further upstream in Reach 2 are the product of the shallower bathymetry, the deep depression in the channel at the further downstream cross sections of Reach 2 surrounding the existing intake decreases the velocities in this area.

At split cross sections, Reach 3 velocities are typically higher in low flow scenarios, and Reach 2 velocities are typically higher in high-flow scenarios. This indicates strongly that the shallower, slower flows in Reach 2 in summer months are more impacted by the channel roughness, but that this influence decreases as flows become deeper in higher flow scenarios.

A comparison of low-flow and high-flow scenarios demonstrates the strong seasonal hydrologic influence on the Molalla River channel near the project area, with maximum water surface elevations separated by 10 feet in some parts of the channel between the highest and lowest flow scenarios (**Table 7**), and channel velocities ranging from 0.1ft/s (ft/s) in the lowest flows at many cross sections, to almost 20 ft/s at the highest flows (**Table 8**).

Table 7: Comparison of Simulated WSEs For All Cross Sections in all Flow Scenarios

Model Cross Section ID	Low-Flow Water Surface Elevations (Feet, NAVD88)			High-Flow Scenarios Water Surface Elevations (Feet, NAVD88)			
	50% Exceedance	25% Exceedance	10% Exceedance	2-Year	25-Year	50-Year	100-Year
1453	396.71	397.30	397.41	401.55	404.46	405.76	406.24
1191	396.71	397.11	397.18	400.43	402.72	403.19	403.87
1068	393.79	395.04	395.12	398.59	400.83	401.90	402.35
885 (Reach 2)	393.79	395.04	395.12	398.59	400.83	403.25	403.69
937 (Reach 3)	393.79	395.04	395.12	398.59	400.83	401.61	402.28
718 (Reach 2)	393.44	394.33	394.39	397.59	400.00	401.60	402.96
746 (Reach 3)	392.24	393.43	393.50	397.56	400.06	400.70	401.43
635 (Reach 2)	392.66	393.59	393.68	397.03	399.68	401.01	401.89
641 (Reach 3)	391.39	392.61	392.70	397.19	399.80	400.37	401.26
554 (Reach 2)	391.84	392.71	392.74	396.55	399.66	400.67	401.54
567 (Reach 3)	390.78	392.10	392.20	396.58	399.55	400.10	400.97
471 (Reach 2)	391.70	392.38	392.41	396.37	399.42	400.06	400.87
331 (Reach 3)	389.88	391.18	391.26	396.24	399.41	399.99	400.67
359	391.70	392.38	392.40	396.38	399.42	400.06	400.67
350.5	388.90	390.15	390.22	396.32	399.36	400.01	400.63
350	388.86	390.14	390.22	396.32	399.37	400.02	400.63
260	387.37	389.27	389.36	394.74	397.56	398.81	399.86
156	386.84	388.65	388.74	394.09	396.88	398.31	399.38

Model Cross Section ID	Low-Flow Water Surface Elevations (Feet, NAVD88)			High-Flow Scenarios Water Surface Elevations (Feet, NAVD88)			
20	386.18	387.87	387.96	393.27	396.00	397.11	398.04

Table 8: Comparison of Simulated Velocities for All Cross Sections in all Flow Scenarios

Model Cross Section ID	Low-Flow Velocities (ft/s)			High-Flow Velocities (ft/s)			
	50% Exceedance	25% Exceedance	10% Exceedance	2-Year	25-Year	50-Year	100-Year
1453	0.2	0.2	0.4	7.4	8.3	7.6	7.8
1191	0.2	0.2	0.2	7.0	9.7	10.6	10.9
1068	3.1	4.2	4.3	9.5	11.8	11.1	11.3
885 (Reach 2)	1.1	2.3	2.3	6.6	8.9	11.8	12.2
937 (Reach 3)	1.8	3.8	4.0	7.6	8.3	10.0	9.3
718 (Reach 2)	0.8	2.8	2.8	6.5	8.1	12.0	20.0
746 (Reach 3)	1.4	4.0	4.1	7.2	7.9	9.1	8.4
635 (Reach 2)	1.8	3.5	3.5	6.5	7.5	11.4	15.8
641 (Reach 3)	1.8	3.9	4.0	6.9	7.5	8.4	8.1
554 (Reach 2)	1.2	3.0	3.1	5.7	5.5	8.6	10.9
567 (Reach 3)	1.0	3.4	3.5	7.6	7.1	7.6	6.4
471 (Reach 2)	0.1	0.7	0.8	3.9	5.0	5.0	9.1
331 (Reach 3)	2.4	5.0	5.1	7.5	6.9	5.2	5.5
359	0.1	0.5	0.5	2.2	2.6	2.6	2.9
350.5	1.8	1.9	1.8	2.2	2.7	2.7	2.2
350	2.3	1.9	1.9	2.2	2.7	2.7	2.5
260	2.5	4.4	4.5	8.8	10.3	9.3	7.8
156	1.5	3.7	3.8	8.1	9.8	8.8	7.7
20	1.9	3.7	3.8	7.7	9.7	10.5	11.1

5.1 RESULTS AT THE EXISTING INTAKE: SCOUR AND DEPOSITION

Original permit documents from 1992 indicate that the depression was excavated to a depth of approximately 7-feet, and backfilled with some amount of gravel (Oregon Division of State Lands; USACE, 1992), and that some version of the rock weir was already in place at that time (Lee Engineering, Inc, 1992). No information related to the removal of the 1992 intake, and any backfill placed at that time, was provided or available. Evidence of regular maintenance includes silty build up at the sump outfall locations which flow for 10 to 15 minutes each day (as discussed with Molalla Public Works employee onsite), and an Oregon Department of State Lands Emergency Authorization Application dated June 30, 2021, received from the City of Molalla, describing the emergency work as “a mini backhoe to clear rocks from the intake structure. This work is normally done during the in-water work period, but this year is especially low flow and work cannot wait,” (Oregon Department of State Lands, 2021). The in-water work period for this part of the Molalla River is July 15 through August 31 (ODFW, 2008).

Since both the depression and rock weir are constructed features and regular maintenance occurs to remove sediments from the existing intake area, some natural geomorphic processes have likely been altered at and near these features. To assess the potential for deposition and scour at and near the project site, the results of the hydraulic model were used to determine the potential for sediment mobility. Based on model outputs at each cross section for velocity and hydraulic depth (Appendix B), approximate critical velocities for mobilizing channel sediments were calculated using equation 6.1 from the Federal Highway Administration HEC-18 (FHWA, 2012). Grain size distribution in the channel used for this analysis was the distribution calculated from Pebble Count 2 because it is most representative of the left channel where scour/aggradation is of most interest for the project (Figure 1).

Reach 3 cross sections are not included in this analysis, so Table 9 can be interpreted upstream to downstream from Reach 1, extending downstream through the left channel only (Reach 2), through the rock weir and past the channel convergence. Cross sections bounding the rock weir (359, 350.0, and 350) are also removed from this comparison, because they are irregularly placed due to model constraints and the grain size distribution is altered at the rock weir, though the weir does act as a physical and hydraulic barrier for some sediment transport. Critical velocities for each grain size are compared to modeled channel velocities (Table 8) to determine mobility of the channel bed sediments, and the largest mobile grain size for each flow event at each cross section is estimated (**Table 9**).

Table 9: Maximum Grain Size Mobilized in this Event at Each Cross Section, Upstream to Downstream

Model Cross Section ID	Low-Flow Scenarios			High-Flow Scenarios			
Wolman Count 2 Distribution: D10 = 1.3 in (33 mm); D16 = 1.5 in (38.6 mm); D30 = 2.4 in (60.4 mm); D50 = 3.1 in (80 mm); D60 = 3.5 in (88.8 mm); D84 = 5.8 in (147.7 mm); D90 = 6.3 in (159.8 mm); D100 = 7.1 in (180 mm)							
	50% Exceedance	25% Exceedance	10% Exceedance	2-Year	25-Year	50-Year	100-Year
1453	<D10	<D10	<D10	D10	D16	<D10	<D10
1191	<D10	<D10	<D10	D10	D30	D60	D60
1068	<D10	<D10	<D10	D60	D84	D60	D60
885 (Reach 2)	<D10	<D10	<D10	<D10	D30	D60	D60
718 (Reach 2)	<D10	<D10	<D10	<D10	D16	D60	D100
635 (Reach 2)	<D10	<D10	<D10	<D10	D10	D60	D100
554 (Reach 2)	<D10	<D10	<D10	<D10	<D10	D16	D50
471 (Reach 2)	<D10	<D10	<D10	<D10	<D10	<D10	D16
260	<D10	<D10	<D10	D30	D60	D30	D10
156	<D10	<D10	<D10	D16	D30	D16	<D10
20	<D10	<D10	<D10	D16	D30	D50	D60

Because of the strong backwater effect of the rock weir, velocities plummet in this area, leading to deposition of mobilized sediment into the depression. However, upstream channel velocities in Reach 2 appear to be insufficient to mobilize larger grain sizes in small to moderate flood events. Together, these trends indicate that there is likely a net depositional zone (based on existing grain sizes present) surrounding the intake due to large decreases in channel velocities at the depression, especially in the case of large storm/mobilization events. However, the existing channel bed configuration is relatively stable, with estimated grain sizes greater than the D60 remaining immobile at all cross sections at all flows less than the 100-year event. This is likely a good indicator that the existing channel where the intake is located, Reach 2 of this report, will remain hydraulically active in the future, and not degrade into a side channel or become dry if existing conditions persist.

In low flow events, generally across all cross sections, the coarse bed material and low summertime channel velocities indicate that the channel bed is generally stable, with velocities failing to mobilize the D10 grain size at all cross sections.

5.2 RESULTS AT THE EXISTING INTAKE: WITHOUT WEIR CONDITION

The deepest portion of the depression is directly upstream of the rock weir along the main flow path. Due to limitations of one-dimensional hydraulic modeling, a cross section could not be placed to intersect the pool since cross sections must both be perpendicular to the direction of flow and also must bound the inline weir structure. However, depths in the existing depression and at the existing intake can be extrapolated from modeled values at the upstream cross section, Cross Section 471 of Reach 2, and the cross section bounding the weir on the upstream side, Cross Section 359 of Reach 2. A single point located at the deepest part of the pool, approximately 383 feet NAVD88, and a point located at approximately the existing intake based on field GPS measurements, at 388.6 feet NAVD88, were placed to compare the depth at uniform locations across all model runs (Figure 8).

A note of caution should be made here: extrapolating the depth at an interpolated point between two cross sections where values have already been averaged to a single quantity has limited value, but a comparative analysis of the same modeled flows with and without the weir is useful for determining possible magnitudes of differences in the depths at the intake.

Depth results in this comparative analysis indicate the importance of the rock weir in maintaining sufficient depth for the drinking water intake to function during the summer months. Model results indicate that without the weir in place the existing intake could be submerged in less than one foot of water for all modeled summer low flows (**Table 10**). The hydraulic conditions that lead to the shallowest depths at the existing intake correspond to the lowest summer flows, with increasing depths at greater flows (**Figure 9**).

Though the existing depression still functions to slow velocities and pool water in the area near the existing intake without the weir, the intake is approximately five feet *above* the bottom of the depression; so without the weir furthering the backwater effect, model results estimate the intake could be submerged in only approximately six inches of water for the majority of the summer low flows (50% summer flow exceedance).

With the weir in place in the existing condition, the backwater extends upstream approximately 83 feet further than without the weir in summer flows (to Reach 2 cross section 554), submerging the existing intake to depths around three feet even at the lowest summer flows (50% exceedance) (**Figure 10**, **Table 10**).

Figure 8: Intake Cross Section and Points of Interest

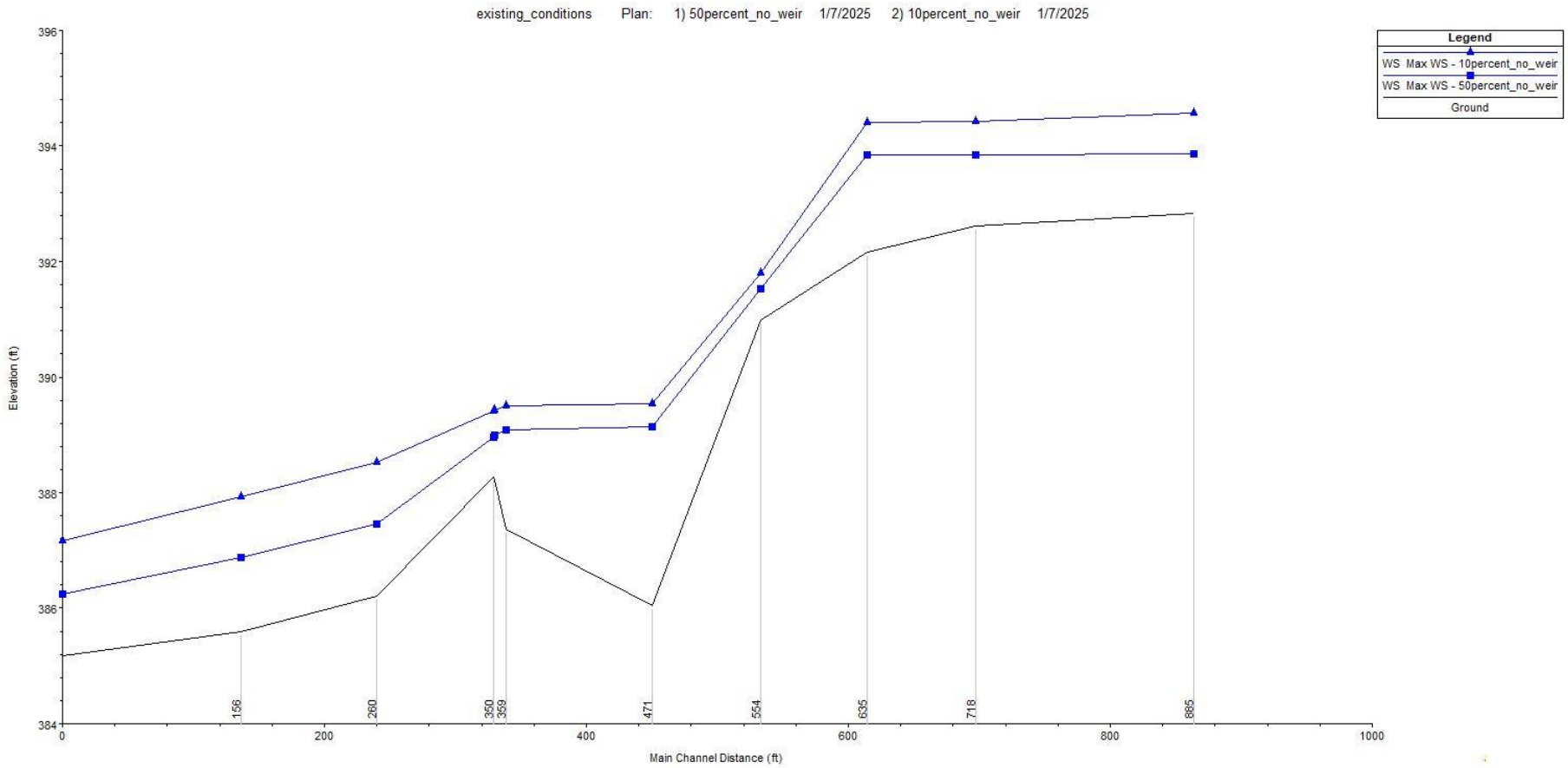


Figure 9: Modeled Depths for Select Summer Low Flows at Reach 2 and Reach 4 Cross Sections Without the Weir

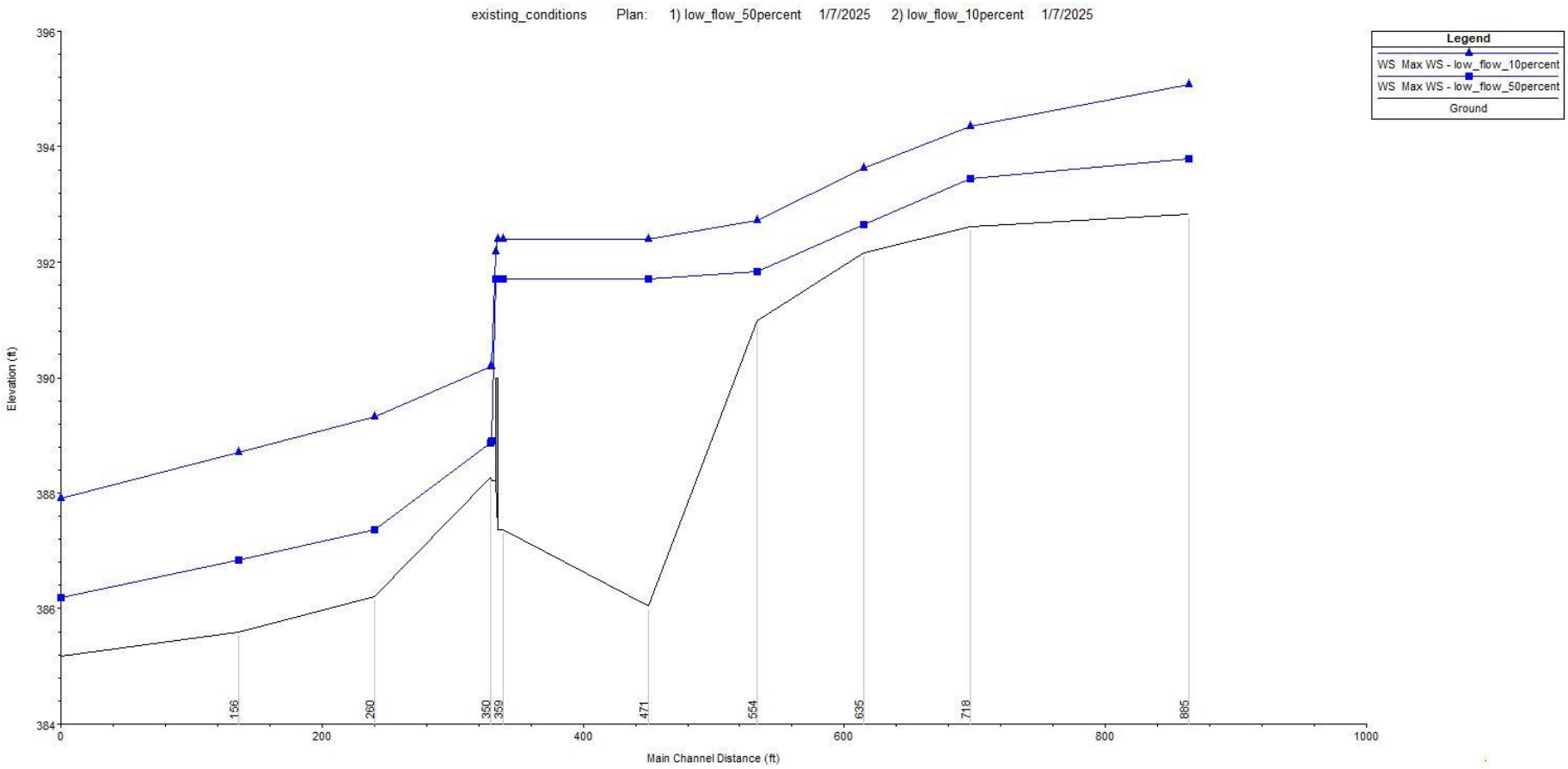


Figure 10: Modeled Depths for Select Summer Low Flows at Reach 2 and Reach 4 Cross Sections with the Weir

Table 10: Maximum Interpolated Water Depths at the Depression Low Point and Existing Intake for all Flows (Feet)

	Low Flow Events						High Flow Events							
	50% Exceedance		25% Exceedance		10% Exceedance		2-Year		25-Year		50-Year		100-Year	
	W[1]	NW[1]	W	NW	W	NW	W	NW	W	NW	W	NW	W	NW
Depression Low Point[2]	8.6	6.0	8.6	6.2	9.3	6.4	13.3	13.7	16.3	16.4	16.8	16.8	17.5	17.2
Existing Intake[3]	3.1	0.5	3.2	0.7	3.8	0.9	7.8	8.3	10.8	11.0	11.4	11.3	12.0	11.7

1 W = with weir condition; NW = no weir condition

2 Located at approximately elevation 383.1 feet NAVD88

3 Located at approximately elevation 388.6 feet NAVD88

5.3 CONCLUSIONS AND RECOMMENDATIONS

While incipient motion analyses are informative, they are insufficient to fully characterize the potential for channel migration or avulsion. A geomorphic risk study is necessary to assess the potential for channel migration and to inform the design of subsequent scour protection elements, including a computation of the minimum riprap gradation necessary to resist the 100-year event.

When assessing conceptual designs for a water intake structure upgrade, it is recommended that at least one design alternative include a scenario for the existing rock weir be upgraded to a permitted, permanent structure and included in normal operations and maintenance as part of the drinking water supply system. Under existing conditions, the rock weir is critical to maintaining the depth of water in the intake pool, especially at low flows. Alternatives that do not provide for a permanent weir structure should consider other options to ensure sufficient depth for the water intake to function or should consider water intake structures that can perform with a lower water depth in the intake pool.

Further recommendations include:

- Analysis to consider the integration of Large Woody Material into the scour protection as a bio-revetments and barb structures to reduce erosive velocities at the riprap and promote habitat.
- A high-level geomorphic risk study to inform the development of an adaptive management plan including frequent inspections, regular maintenance, and event-based maintenance to manage sediment deposition surrounding the intake.

6.0 MODEL LIMITATIONS AND DATA GAPS

The HEC-RAS model for this hydraulic analysis was developed with the primary goal of demonstrating compliance with FEMA No-Rise Certification for Floodways, which requires the use of a one-dimensional (1D) hydraulic model. One-dimensional hydraulic models are typically effective analytical tools for rivers due to the obvious primary direction of flow and the disproportionately long longitudinal length scale (along the river) when compared to the lateral and vertical length scales. However, by their nature, 1D models have a few noteworthy limitations; primarily that computations only occur at cross sections, and the computed values must be interpolated between cross sections; and that within the cross section, the computed velocities and water surface elevations are averaged across the channel width.

In the studied reach of the Molalla River, the main river channel splits into two parallel reaches. During low flow events, which are of interest to the intake structure design, water surface elevations in each reach can differ significantly. In this situation, a classic 1D modeling approach, where cross sections are cut across the full channel and floodplain width, is insufficient to characterize the distinct hydraulic behavior in each reach. The project team employed the split-flow model approach described in Section 4.3, which was able to resolve the distinct behavior in each of the parallel reaches. As the project moves beyond the preliminary stages, the model should also be refined. Because insufficient data is available to calibrate the model, a sensitivity analysis of the input parameters, especially Manning's n, should be performed. Additionally, the model should be refined to more directly address the rock weir, which is porous and discharges flow through the weir in addition to over the weir.

Finally, it should be noted that many of the inherent limitations to 1D hydraulic modeling are fully resolved using two-dimensional (2D) hydraulic modeling, although 2D modeling is inappropriate to demonstrate compliance with FEMA No-Rise standards. Historically, 2D modeling has been reserved for large and very complex projects due to modeling difficulty, computational instability issues, and long model runtimes. However, modern advances in computer hardware and improved software usability in programs like HEC-RAS 2D have made the use of a 2D model significantly more cost and time effective, and existing 1D models can be quickly transformed into 2D models without starting again from scratch. With reference to this project, 2D modeling will be able to resolve flow around and over the island more robustly than a split-flow 1D model and will be able to directly account for the multi-directional outflow (east, over the rock weir, and north, down the river channel) of the historic depression near the current water intake location. While not strictly necessary for the completion of the project, we would recommend benefits of 2D modeling be considered to support follow-on scour and sediment transport assessments that may be necessary to inform the design of the new intake structure. It should be noted that while much of the data required to develop a 2D model of this system have already been acquired and applied to the 1D split flow model, additional and more detailed surveying would likely be necessary to define the channel characteristics in between the surveyed cross sections used for the 1D model.

7.0 REFERENCES

City of Molalla. (2021, May). *Water Management, Conservation, and Water System Master Plan.* Retrieved from www.cityofmolalla.com/sites/default/files/fileattachments/public_works/page/1761/wmcwsmp_adopted_20210526_ord_2021-08.pdf

City of Molalla. (2024, August 27). *Molalla's Water System*. Retrieved from https://current.cityofmolalla.com/molalla-s-water-system

DOGAMI. (2009). *LiDAR Remote Sensing Data Collection, Department of Geology and Mineral Industries, Willamette Valley Phase 1 Study Area.* Portland, Oregon: Prepared by Watershed Sciences, Inc.

England, J. F., Cohn, T. A., Faber, B. A., Stedinger, J. R., Thomas, W. O., Veilleux, A. G., . . . Mason, R. R. (2018). *Guidelines for determining flood flow frequency — Bulletin 17C (ver. 1.1, May 2019): U.S. Geological Survey Techniques and Methods, book 4, chap. B5, 148 p.* Retrieved from https://doi.org/10.3133/tm4B5

FEMA. (1981, April). HEC-2 Model Output: 10, 50, 100, and 500 Year Frequency Profiles. North Yamhill River, Yamhill County, Oregon. Portland, Oregon: Federal Emergency Management Agency.

FEMA. (2008). *Flood Insurance Study, Clackamas County Oregon and Incorporated Areas.* Flood Insurance Study 41005CV001A-1C. Effective March 2, 2010. Federal Emergency Management Agency.

FEMA. (2023, November 10). USA Structures Feature Layer.

FHWA. (2012, April). FHWA-HIF-12-003 Hydraulic Engineering Circular No. 18. U.S. Depeartment of Transportation.

Lee Engineering, Inc. (1992, June). City of Molalla Water System Intake Improvements.

NOAA. (2024). Molalla River Near Canby (Recent and Historic Crests). Northwest River Forecast Center; NAtional Water Prediction Service. Retrieved from https://water.noaa.gov/gauges/cano3

ODFW. (2008, June). *OREGON GUIDELINES FOR TIMING OF IN-WATER WORK TO PROTECT FISH AND WILDLIFE RESOURCES*.

Oregon Department of State Lands. (2021, June 30). Emergency Authorization Application 63417.

Oregon Division of State Lands; USACE. (1992, April 6). Joint Permit Application USACE199200307; Oregon Division of State Lands RF6690.

PACE. (2024, September 13). PACE Engineers. *Molalla Water Intake Predesign Topographic Survey*.

Ron Bush Engineering and Surveying. (2022). Bathymetric Survey of North Yamhill River.

USACE. (2023, June 15). HEC-SSP v2.3.

USACE. (2024). *HEC-RAS River Analysis System: Hydraulic Reference Manual. Version 6.6.* United States Army Corps of Engineers.

USACE Hydraulic Engineering Center. (2024). *HEC-RAS River Analysis System: Energy Loss Coefficients (Version 6.6).* Retrieved from Energy Loss Coefficients: Table 3-1 Manning's n Values: https://www.hec.usace.army.mil/confluence/rasdocs/ras1dtechref/latest/basic-data-requirements/geometric-data/energy-loss-coefficients

USGS. (2024). Aerial Photo Single Frames. *Aerial Photo Single Frames from years 1952-2003*.

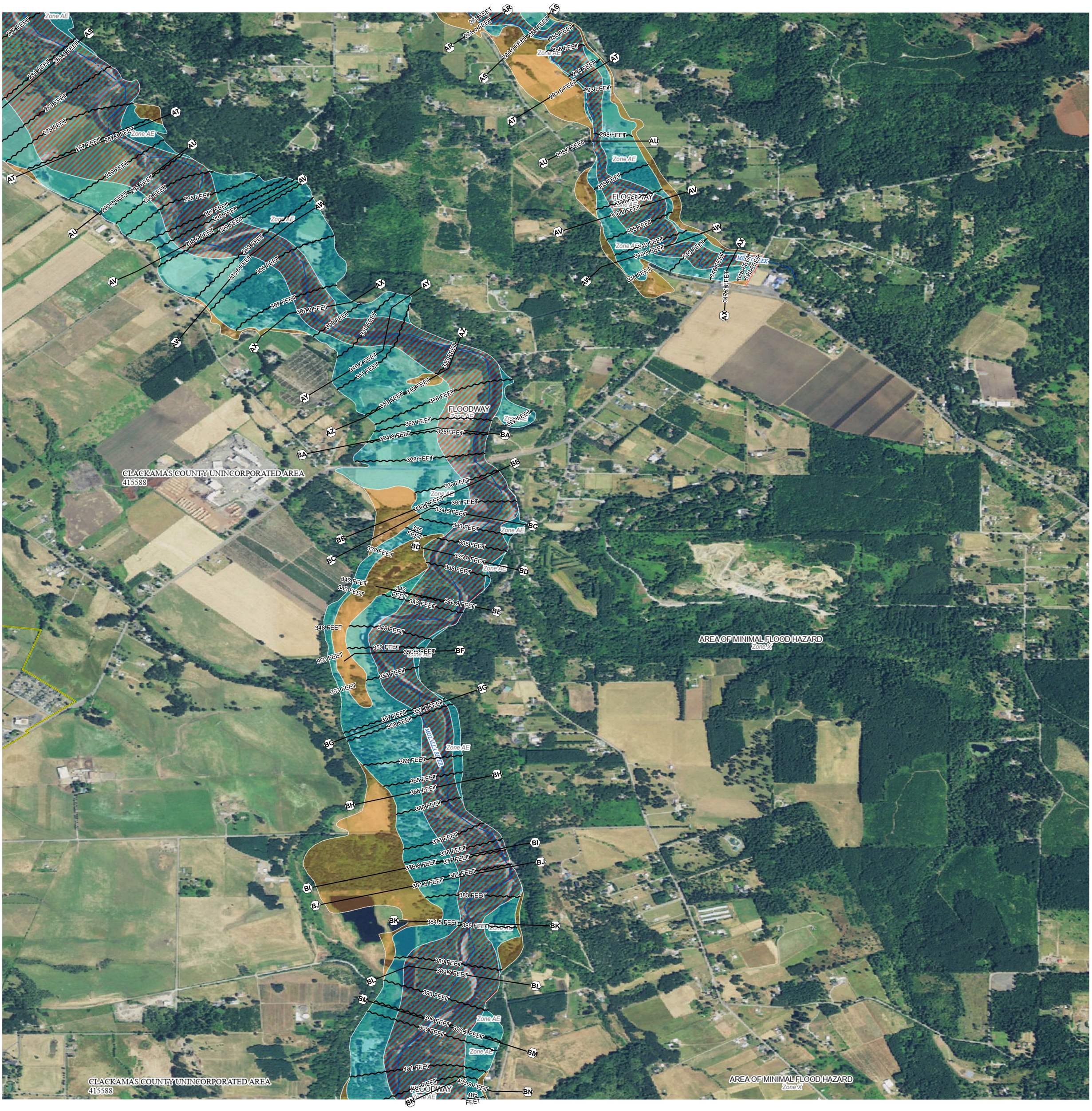
USGS. (2024, October 9). Stage-Discharge Rating for Molalla River Near Canby number 14200000. Retrieved from https://waterdata.usgs.gov/nwisweb/data/ratings/exsa/USGS.14200000.exsa.rdb

USGS. (2024). *StreamStats*. Retrieved from https://streamstats.usgs.gov/ss/

Watershed Sciences. (2009, December). LiDAR Remote Sensing Data Collection: DOGAMI, Willamette Valley Phase 1, Oregon. *Willamette Valley Phase 1, Oregon*. Oregon: DOGAMI.

APPENDIX A: FEMA FIRMETTE

122°33'45.91"W 45°11'28.23"N



122°29'59.2"W 45°7'16.87"N

FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR DRAFT FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee See Notes *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary

NOTES TO USERS

For information and questions about this Flood Insurance Rate Map (FIRM), available products associated with this FIRM, including historic versions, the current map date for each FIRM panel, how to order products, or the National Flood Insurance Program (NFIP) in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Flood Map Service Center website at https://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Flood Map Service Center at the number listed above.

For community and countywide map dates, refer to the Flood Insurance Study Report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

Basemap information shown on this FIRM was provided in digital format by USDA, Farm Service Agency (FSA). This information was derived from NAIP, dated April 11, 2018.

This map was exported from FEMA's National Flood Hazard Layer (NFHL) on **11/14/2024 12:51 AM** and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time. For additional information, please see the Flood Hazard Mapping Updates Overview Fact Sheet at https://www.fema.gov/media-library/assets/documents/118418

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards. This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date.

SCALE

Map Projection:
GCS, Geodetic Reference System 1980;
Vertical Datum: NAVD88
For information about the specific vertical datum for elevation features, datum conversions, or vertical monuments used to create this map, please see the Flood Insurance Study (FIS) Report for your community at https://msc.fema.gov

N

1 inch = 1,000 feet 1:12,000

0 500 1,000 2,000 3,000 4,000 Feet

0 105 210 420 630 840 Meters

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

PANEL **545** OF **805**

Panel Contains:

COMMUNITY	NUMBER	PANEL
CITY OF MOLALLA CLACKAMAS COUNTY UNINCORPORATED AREA	410620 415588	0545 0545

MAP NUMBER
41005C0545D
EFFECTIVE DATE
June 17, 2008

APPENDIX B: HEC-RAS OUTPUT FOR EXISTING CONDITIONS

HEC-RAS Profile: Max WS

Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach 1	1453	Max WS	low_flow_50percent	59.00	392.93	396.71		396.71	0.000007	0.17	342.21	152.17	0.02
Reach 1	1453	Max WS	low_flow_25percent	78.70	392.93	396.92		396.92	0.000010	0.21	367.89	156.55	0.02
Reach 1	1453	Max WS	low_flow_10percent	136.20	392.93	397.35		397.35	0.000021	0.32	422.69	181.50	0.03
Reach 1	1453	Max WS	2_year_unsteady	8350.61	392.93	401.57		402.43	0.004405	7.46	1132.76	1279.11	0.53
Reach 1	1453	Max WS	25_year_unsteady	16952.00	392.93	404.46		405.33	0.003668	8.31	4240.57	1654.01	0.50
Reach 1	1453	Max WS	50_year_unsteady	19953.00	392.93	405.61		406.26	0.002662	7.60	6064.78	1785.92	0.43
Reach 1	1453	Max WS	100_year_unsteady	22180.80	392.93	406.11		406.74	0.002504	7.62	6972.60	1829.20	0.42
Reach 1	1453	Max WS	50percent_no_weir	59.00	392.93	395.55		395.56	0.000037	0.29	203.55	123.53	0.04
Reach 1	1453	Max WS	25percent_no_weir	78.70	392.93	395.86		395.87	0.000039	0.33	239.94	134.12	0.04
Reach 1	1453	Max WS	10percent_no_weir	136.20	392.93	396.15		396.15	0.000076	0.50	274.14	139.60	0.06
Reach 1	1453	Max WS	2yr_no_weir	8350.61	392.93	402.34	399.17	403.02	0.003032	6.61	1313.63	1537.50	0.44
Reach 1	1453	Max WS	25yr_no_weir	16952.00	392.93	404.84		405.55	0.002948	7.63	4776.15	1671.11	0.45
Reach 1	1453	Max WS	50yr_no_weir	19953.00	392.93	405.61		406.26	0.002662	7.60	6064.78	1785.92	0.43
Reach 1	1453	Max WS	100yr_no_weir	22180.80	392.93	406.11		406.74	0.002504	7.62	6972.60	1829.20	0.42
Reach 1	1191	Max WS	low_flow_50percent	58.97	392.95	396.71		396.71	0.000006	0.15	402.12	335.77	0.02
Reach 1	1191	Max WS	low_flow_25percent	78.68	392.95	396.91		396.91	0.000009	0.18	436.21	372.52	0.02
Reach 1	1191	Max WS	low_flow_10percent	106.93	392.95	397.14		397.14	0.000013	0.22	475.25	417.09	0.02
Reach 1	1191	Max WS	2_year_unsteady	8353.58	392.95	400.45		401.21	0.004962	6.99	1197.40	1172.18	0.54
Reach 1	1191	Max WS	25_year_unsteady	16951.93	392.95	402.72	400.76	404.15	0.006388	9.66	2186.94	1769.49	0.64
Reach 1	1191	Max WS	50_year_unsteady	19952.45	392.95	403.12	401.43	404.75	0.006979	10.47	2765.45	1816.21	0.68
Reach 1	1191	Max WS	100_year_unsteady	23249.32	392.95	403.65	403.34	405.34	0.006903	10.89	3534.40	1914.84	0.68
Reach 1	1191	Max WS	50percent_no_weir	58.98	392.95	395.55		395.55	0.000030	0.25	232.72	252.89	0.03
Reach 1	1191	Max WS	25percent_no_weir	70.47	392.95	395.85		395.85	0.000025	0.26	275.06	277.09	0.03
Reach 1	1191	Max WS	10percent_no_weir	132.44	392.95	396.07		396.08	0.000063	0.43	307.45	289.22	0.05
Reach 1	1191	Max WS	2yr_no_weir	8119.79	392.95	401.70		402.17	0.002387	5.47	1489.21	1572.49	0.38
Reach 1	1191	Max WS	25yr_no_weir	16952.00	392.95	403.41	400.76	404.43	0.004230	8.35	3187.98	1863.31	0.53
Reach 1	1191	Max WS	50yr_no_weir	19952.49	392.95	403.12	401.43	404.75	0.006968	10.46	2769.22	1816.54	0.68
Reach 1	1191	Max WS	100yr_no_weir	23084.90	392.95	403.39	403.32	405.29	0.007959	11.44	3152.88	1859.17	0.73
Reach 1	1068	Max WS	low_flow_50percent	59.09	392.96	393.79	393.80	393.94	0.048480	3.14	18.84	66.39	1.04
Reach 1	1068	Max WS	low_flow_25percent	78.82	392.96	393.87	393.88	394.03	0.053914	3.24	24.30	88.23	1.09
Reach 1	1068	Max WS	low_flow_10percent	815.84	392.96	395.08		395.36	0.012018	4.27	191.23	227.40	0.66
Reach 1	1068	Max WS	2_year_unsteady	8354.79	392.96	398.60		400.01	0.014718	9.52	877.74	736.40	0.87
Reach 1	1068	Max WS	25_year_unsteady	16951.99	392.96	400.83	400.37	402.99	0.013728	11.80	1471.70	1467.98	0.91
Reach 1	1068	Max WS	50_year_unsteady	19953.00	392.96	401.81	401.81	403.59	0.009666	11.03	2699.58	1708.17	0.78
Reach 1	1068	Max WS	100_year_unsteady	22180.80	392.96	402.17	402.17	403.96	0.009305	11.22	3204.64	1810.34	0.77
Reach 1	1068	Max WS	50percent_no_weir	59.00	392.96	394.25		394.26	0.001364	0.80	73.39	182.49	0.19
Reach 1	1068	Max WS	25percent_no_weir	261.57	392.96	394.37		394.50	0.013946	2.91	89.74	188.64	0.64
Reach 1	1068	Max WS	10percent_no_weir	136.20	392.96	394.61		394.63	0.001347	1.10	123.56	201.13	0.21
Reach 1	1068	Max WS	2yr_no_weir	8350.61	392.96	401.35		401.75	0.002334	5.16	2099.95	1588.77	0.38
Reach 1	1068	Max WS	25yr_no_weir	18200.33	392.96	401.10	401.48	403.29	0.013160	11.93	1795.21	1532.06	0.89
Reach 1	1068	Max WS	50yr_no_weir	19953.00	392.96	401.81	401.81	403.59	0.009666	11.03	2699.58	1708.17	0.78
Reach 1	1068	Max WS	100yr_no_weir	22180.80	392.96	402.17	402.17	403.96	0.009305	11.22	3204.64	1810.34	0.77
Reach 2	885	Max WS	low_flow_50percent	25.10	392.83	393.79		393.81	0.003262	1.10	22.90	51.56	0.29
Reach 2	885	Max WS	low_flow_25percent	31.91	392.83	393.87		393.89	0.003413	1.19	26.84	55.35	0.30
Reach 2	885	Max WS	low_flow_10percent	267.48	392.83	395.08		395.16	0.003025	2.34	114.12	148.74	0.34
Reach 2	885	Max WS	2_year_unsteady	2640.51	392.83	398.60		399.29	0.005516	6.62	398.63	223.56	0.54
Reach 2	885	Max WS	25_year_unsteady	5264.03	392.83	400.83		402.06	0.006515	8.91	606.47	397.18	0.61
Reach 2	885	Max WS	50_year_unsteady	9976.50	392.83	403.10	402.90	405.10	0.008022	11.73	1313.05	526.79	0.70
Reach 2	885	Max WS	100_year_unsteady	11090.40	392.83	403.50	403.39	405.55	0.008054	12.07	1523.83	527.07	0.70
Reach 2	885	Max WS	50percent_no_weir	11.60	392.83	393.87		393.87	0.000433	0.43	27.19	55.53	0.11
Reach 2	885	Max WS	25percent_no_weir	92.26	392.83	394.37		394.41	0.002856	1.52	60.54	117.02	0.30
Reach 2	885	Max WS	10percent_no_weir	161.80	392.83	394.56		394.64	0.004336	2.15	75.09	135.19	0.38
Reach 2	885	Max WS	2yr_no_weir	4175.30	392.83	399.88		400.93	0.006533	8.23	507.13	274.46	0.60
Reach 2	885	Max WS	25yr_no_weir	8476.00	392.83	402.58	401.11	404.41	0.007611	11.01	1038.01	526.44	0.67
Reach 2	885	Max WS	50yr_no_weir	9976.50	392.83	403.10	402.90	405.10	0.008023	11.73	1313.00	526.79	0.70
Reach 2	885	Max WS	100yr_no_weir	11090.40	392.83	403.50	403.39	405.55	0.008054	12.07	1523.83	527.07	0.70
Reach 2	718	Max WS	low_flow_50percent	25.08	392.62	393.44		393.45	0.001046	0.75	33.35	79.45	0.17
Reach 2	718	Max WS	low_flow_25percent	31.91	392.62	393.48		393.49	0.001442	0.91	35.20	80.61	0.20
Reach 2	718	Max WS	low_flow_10percent	273.15	392.62	394.36		394.48	0.005197	2.81	97.18	111.00	0.45
Reach 2	718	Max WS	2_year_unsteady	2641.50	392.62	397.61		398.27	0.006631	6.55	408.39	286.76	0.57
Reach 2	718	Max WS	25_year_unsteady	5264.31	392.62	400.00		401.01	0.006009	8.11	661.30	424.88	0.57
Reach 2	718	Max WS	50_year_unsteady	9976.50	392.62	401.52	400.37	403.60	0.009770	11.84	1167.71	522.14	0.75
Reach 2	718	Max WS	100_year_unsteady	21390.83	392.62	402.78	404.75	408.14	0.022598	19.89	1840.64	553.73	1.17
Reach 2	718	Max WS	50percent_no_weir	9.63	392.62	393.84		393.84	0.000032	0.17	58.34	97.00	0.03
Reach 2	718	Max WS	25percent_no_weir	58.66	392.62	394.24		394.24	0.000329	0.67	87.72	108.34	0.11
Reach 2	718	Max WS	10percent_no_weir	86.39	392.62	394.43		394.44	0.000431	0.84	103.30	112.76	0.13
Reach 2	718	Max WS	2yr_no_weir	4175.30	392.62	398.71		399.72	0.007765	8.11	522.75	353.83	0.64
Reach 2	718	Max WS	25yr_no_weir	8476.00	392.62	400.96	399.67	402.88	0.009652	11.20	879.20	507.18	0.74
Reach 2	718	Max WS	50yr_no_weir	9976.50	392.62	401.52	400.37	403.60	0.009770	11.84	1167.71	522.14	0.75
Reach 2	718	Max WS	100yr_no_weir	11090.40	392.62	401.90	401.90	404.05	0.009746	12.21	1367.87	528.73	0.76
Reach 2	635	Max WS	low_flow_50percent	25.09	392.16	392.66		392.71	0.017953	1.80	13.95	53.74	0.62
Reach 2	635	Max WS	low_flow_25percent	31.88	392.16	392.70		392.76	0.016645	1.92	16.61	54.88	0.62
Reach 2	635	Max WS	low_flow_10percent	265.43	392.16	393.63		393.82	0.010149	3.50	75.80	113.41	0.61
Reach 2	635	Max WS	2_year_unsteady	2642.14	392.16	397.05		397.71	0.007128	6.52	410.78	302.25	0.58
Reach 2	635	Max WS	25_year_unsteady	5264.23	392.16	399.68		400.55	0.005360	7.54	740.72	558.19	0.53
Reach 2	635	Max WS	50_year_unsteady	9976.50	392.16	400.90	400.90	402.73	0.009588	11.29	1348.73	686.30	0.73
Reach 2	635	Max WS	100_year_unsteady	16868.71	392.16	401.71	402.66	405.03	0.016604	15.86	1909.06	702.13	0.97
Reach 2	635	Max WS	50percent_no_weir	9.24	392.16	393.84		393.84	0.000007	0.10	92.26	126.86	0.02
Reach 2	635	Max WS	25percent_no_weir	58.50	392.16	394.22		394.23	0.000115	0.47	124.34	145.83	0.07
Reach 2	635	Max WS	10percent_no_weir	84.62	392.16	394.41		394.42	0.000167	0.60	141.42	155.26	0.08

HEC-RAS Profile: Max WS (Continued)

Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach 2	635	Max WS	2yr_no_weir	4175.30	392.16	397.96		399.02	0.009154	8.29	514.73	379.80	0.67
Reach 2	635	Max WS	25yr_no_weir	8476.00	392.16	400.07	399.13	402.02	0.011282	11.36	831.18	620.72	0.77
Reach 2	635	Max WS	50yr_no_weir	9976.50	392.16	400.90	400.90	402.73	0.009588	11.29	1348.73	686.30	0.73
Reach 2	635	Max WS	100yr_no_weir	11090.40	392.16	401.32	401.32	403.11	0.009140	11.41	1635.60	701.36	0.71
Reach 2	554	Max WS	low_flow_50percent	25.06	390.98	391.84		391.86	0.003518	1.15	21.81	47.66	0.30
Reach 2	554	Max WS	low_flow_25percent	31.87	390.98	391.92		391.95	0.003780	1.24	25.79	51.96	0.31
Reach 2	554	Max WS	low_flow_10percent	245.80	390.98	392.73		392.87	0.010875	3.06	80.20	76.89	0.53
Reach 2	554	Max WS	2_year_unsteady	2643.08	390.98	396.57		397.07	0.008386	5.67	467.18	303.73	0.49
Reach 2	554	Max WS	25_year_unsteady	5264.08	390.98	399.66		400.07	0.004380	5.51	1503.10	589.74	0.36
Reach 2	554	Max WS	50_year_unsteady	9976.50	390.98	400.54		401.44	0.009058	8.56	2056.76	677.64	0.53
Reach 2	554	Max WS	100_year_unsteady	15410.54	390.98	401.38		402.69	0.012581	10.79	2628.79	697.56	0.64
Reach 2	554	Max WS	50percent_no_weir	36.58	390.98	391.53	391.56	391.74	0.060045	3.69	9.93	32.23	1.17
Reach 2	554	Max WS	25percent_no_weir	60.79	390.98	391.65	391.70	391.94	0.060798	4.35	13.97	35.71	1.23
Reach 2	554	Max WS	10percent_no_weir	93.15	390.98	391.80	391.88	392.14	0.059121	4.72	19.74	43.72	1.24
Reach 2	554	Max WS	2yr_no_weir	2969.06	390.98	397.00		397.52	0.007895	5.79	514.29	328.17	0.48
Reach 2	554	Max WS	25yr_no_weir	8476.00	390.98	400.03		400.87	0.008793	8.08	1729.76	624.55	0.52
Reach 2	554	Max WS	50yr_no_weir	9976.50	390.98	400.53		401.44	0.009118	8.58	2050.18	677.62	0.54
Reach 2	554	Max WS	100yr_no_weir	11090.40	390.98	400.96		401.83	0.008446	8.56	2345.30	678.31	0.52
Reach 2	471	Max WS	low_flow_50percent	25.05	386.04	391.70		391.70	0.000003	0.10	247.10	79.67	0.01
Reach 2	471	Max WS	low_flow_25percent	31.84	386.04	391.77		391.77	0.000005	0.13	252.80	80.49	0.01
Reach 2	471	Max WS	low_flow_10percent	222.90	386.04	392.40		392.41	0.000152	0.73	304.93	86.30	0.07
Reach 2	471	Max WS	2_year_unsteady	2644.01	386.04	396.40		396.64	0.001902	3.91	693.92	307.76	0.26
Reach 2	471	Max WS	25_year_unsteady	5264.02	386.04	399.42		399.76	0.002290	4.95	1687.24	698.03	0.28
Reach 2	471	Max WS	50_year_unsteady	5901.19	386.04	399.95		400.28	0.002210	4.95	2071.48	727.16	0.27
Reach 2	471	Max WS	100_year_unsteady	12581.12	386.04	400.70		401.69	0.006762	9.00	2612.81	730.36	0.48
Reach 2	471	Max WS	50percent_no_weir	42.70	386.04	389.13		389.14	0.000170	0.53	81.24	46.66	0.07
Reach 2	471	Max WS	25percent_no_weir	56.91	386.04	389.30		389.31	0.000239	0.64	89.33	48.96	0.08
Reach 2	471	Max WS	10percent_no_weir	90.76	386.04	389.54		389.56	0.000442	0.89	101.74	52.66	0.11
Reach 2	471	Max WS	2yr_no_weir	2956.63	386.04	396.84		397.10	0.001997	4.11	741.65	338.46	0.26
Reach 2	471	Max WS	25yr_no_weir	5366.17	386.04	399.56		399.89	0.002220	4.90	1786.47	709.66	0.27
Reach 2	471	Max WS	50yr_no_weir	5914.16	386.04	399.92		400.25	0.002262	5.01	2044.22	726.68	0.28
Reach 2	471	Max WS	100yr_no_weir	6349.07	386.04	400.32		400.63	0.002110	4.91	2341.51	729.19	0.27
Reach 2	359	Max WS	low_flow_50percent	25.02	387.36	391.70	387.87	391.70	0.000001	0.07	383.35	176.21	0.01
Reach 2	359	Max WS	low_flow_25percent	31.81	387.36	391.77	387.92	391.77	0.000001	0.08	396.00	179.80	0.01
Reach 2	359	Max WS	low_flow_10percent	222.04	387.36	392.39	388.69	392.40	0.000037	0.48	517.76	211.40	0.04
Reach 2	359	Max WS	2_year_unsteady	2645.54	387.36	396.41	391.08	396.48	0.000346	2.22	1541.74	405.41	0.15
Reach 2	359	Max WS	25_year_unsteady	5263.73	387.36	399.42	392.70	399.51	0.000319	2.64	3557.90	780.72	0.15
Reach 2	359	Max WS	50_year_unsteady	5694.28	387.36	399.96	392.92	400.04	0.000294	2.62	3976.55	784.34	0.15
Reach 2	359	Max WS	100_year_unsteady	6890.13	387.36	400.49	393.39	400.59	0.000345	2.92	4393.56	791.47	0.16
Reach 2	359	Max WS	50percent_no_weir	37.18	387.36	389.08		389.09	0.000199	0.46	80.12	93.45	0.09
Reach 2	359	Max WS	25percent_no_weir	57.28	387.36	389.27		389.28	0.000268	0.58	98.26	96.20	0.10
Reach 2	359	Max WS	10percent_no_weir	90.81	387.36	389.50		389.51	0.000378	0.75	120.61	100.10	0.12
Reach 2	359	Max WS	2yr_no_weir	2942.39	387.36	396.86		396.93	0.000344	2.30	1746.72	499.51	0.15
Reach 2	359	Max WS	25yr_no_weir	5058.95	387.36	399.57		399.64	0.000276	2.48	3671.95	781.57	0.14
Reach 2	359	Max WS	50yr_no_weir	5692.69	387.36	399.92		400.00	0.000299	2.63	3948.00	784.04	0.15
Reach 2	359	Max WS	100yr_no_weir	6290.04	387.36	400.33		400.42	0.000307	2.73	4270.57	788.68	0.15
Reach 2	354 rock_weir			Inl Struct									
Reach 2	350.5	Max WS	low_flow_50percent	25.02	388.22	388.90		388.95	0.011834	1.80	13.87	41.75	0.55
Reach 2	350.5	Max WS	low_flow_25percent	31.81	388.22	388.96		389.02	0.011536	1.91	16.68	45.13	0.55
Reach 2	350.5	Max WS	low_flow_10percent	204.14	388.22	390.19		390.24	0.003912	1.85	110.58	120.12	0.34
Reach 2	350.5	Max WS	2_year_unsteady	2645.54	388.22	396.34		396.42	0.000498	2.22	1208.30	403.12	0.16
Reach 2	350.5	Max WS	25_year_unsteady	5264.14	388.22	399.36		399.48	0.000474	2.72	2510.10	788.27	0.16
Reach 2	350.5	Max WS	50_year_unsteady	5694.28	388.22	399.91		400.02	0.000433	2.69	2940.84	791.98	0.16
Reach 2	350.5	Max WS	100_year_unsteady	5257.02	388.22	400.45		400.52	0.000291	2.28	3367.30	798.74	0.13
Reach 2	350.5	Max WS	50percent_no_weir	36.83	388.22	388.99		389.06	0.012499	2.04	18.03	46.68	0.58
Reach 2	350.5	Max WS	25percent_no_weir	53.49	388.22	389.20		389.26	0.007396	1.84	29.06	57.89	0.46
Reach 2	350.5	Max WS	10percent_no_weir	86.34	388.22	389.43		389.49	0.006764	1.99	43.37	69.84	0.45
Reach 2	350.5	Max WS	2yr_no_weir	2941.16	388.22	396.85		396.92	0.000473	2.27	1314.39	509.11	0.16
Reach 2	350.5	Max WS	25yr_no_weir	5052.31	388.22	399.56		399.65	0.000400	2.53	2662.61	789.39	0.15
Reach 2	350.5	Max WS	50yr_no_weir	5687.99	388.22	399.91		400.02	0.000432	2.68	2941.40	791.98	0.16
Reach 2	350.5	Max WS	100yr_no_weir	6287.99	388.22	400.32		400.43	0.000440	2.78	3267.53	796.49	0.16
Reach 2	350	Max WS	low_flow_50percent	25.00	388.27	388.86		388.94	0.024004	2.28	10.97	37.91	0.75
Reach 2	350	Max WS	low_flow_25percent	31.80	388.27	388.93		389.01	0.020725	2.34	13.60	41.42	0.72
Reach 2	350	Max WS	low_flow_10percent	204.13	388.27	390.19		390.24	0.004156	1.91	106.88	117.99	0.35
Reach 2	350	Max WS	2_year_unsteady	2645.55	388.27	396.34		396.42	0.000488	2.21	1210.02	414.27	0.16
Reach 2	350	Max WS	25_year_unsteady	5264.06	388.27	399.37		399.48	0.000455	2.67	2624.65	789.17	0.16
Reach 2	350	Max WS	50_year_unsteady	5693.82	388.27	399.91		400.02	0.000414	2.64	3055.58	793.17	0.15
Reach 2	350	Max WS	100_year_unsteady	5255.87	388.27	400.45		400.53	0.000278	2.23	3485.58	800.24	0.13
Reach 2	350	Max WS	50percent_no_weir	36.63	388.27	388.95		389.05	0.022409	2.51	14.62	42.69	0.76
Reach 2	350	Max WS	25percent_no_weir	53.10	388.27	389.19		389.25	0.009558	2.03	26.19	55.53	0.52
Reach 2	350	Max WS	10percent_no_weir	86.16	388.27	389.41		389.49	0.008105	2.15	40.06	67.12	0.49
Reach 2	350	Max WS	2yr_no_weir	2941.05	388.27	396.85		396.92	0.000464	2.25	1316.78	514.83	0.16
Reach 2	350	Max WS	25yr_no_weir	5051.69	388.27	399.56		399.65	0.000383	2.48	2776.69	790.51	0.15
Reach 2	350	Max WS	50yr_no_weir	5687.56	388.27	399.91		400.02	0.000413	2.63	3056.04	793.18	0.15
Reach 2	350	Max WS	100yr_no_weir	6287.81	388.27	400.32		400.43	0.000421	2.72	3382.59	797.68	0.16
Reach 3	937	Max WS	low_flow_50percent	33.98	393.10	393.79		393.84	0.015128	1.81	18.81	63.89	0.58
Reach 3	937	Max WS	low_flow_25percent	46.91	393.10	393.87		393.93	0.014141	1.99	23.64	66.82	0.58
Reach 3	937	Max WS	low_flow_10percent	548.36	393.10	395.08		395.31	0.010724	3.92	155.85	153.65	0.62

HEC-RAS Profile: Max WS (Continued)

Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach 3	937	Max WS	2_year_unsteady	5714.29	393.10	398.60		399.29	0.007653	7.65	1292.46	557.66	0.64
Reach 3	937	Max WS	25_year_unsteady	11687.83	393.10	400.83		401.48	0.005392	8.31	3299.40	1243.85	0.57
Reach 3	937	Max WS	50_year_unsteady	16609.88	393.10	401.51		402.36	0.006732	9.86	4196.26	1390.90	0.64
Reach 3	937	Max WS	100_year_unsteady	18249.76	393.10	402.10		402.78	0.005254	9.15	5024.89	1403.20	0.57
Reach 3	937	Max WS	50percent_no_weir	47.75	393.10	393.87		393.93	0.013859	1.99	24.07	67.10	0.58
Reach 3	937	Max WS	25percent_no_weir	169.32	393.10	394.37		394.48	0.012031	2.70	65.54	107.74	0.59
Reach 3	937	Max WS	10percent_no_weir	256.18	393.10	394.56		394.71	0.011896	3.09	87.39	115.21	0.61
Reach 3	937	Max WS	2yr_no_weir	7004.07	393.10	399.00		399.80	0.008248	8.38	1524.03	652.05	0.67
Reach 3	937	Max WS	25yr_no_weir	14458.70	393.10	401.10		401.94	0.006759	9.54	3648.38	1306.93	0.64
Reach 3	937	Max WS	50yr_no_weir	16609.71	393.10	401.51		402.36	0.006730	9.86	4196.69	1390.92	0.64
Reach 3	937	Max WS	100yr_no_weir	18674.39	393.10	401.87		402.71	0.006456	9.96	4712.88	1402.52	0.63
Reach 3	746	Max WS	low_flow_50percent	33.95	391.65	392.24		392.27	0.007010	1.43	23.75	63.88	0.41
Reach 3	746	Max WS	low_flow_25percent	46.86	391.65	392.32		392.36	0.007565	1.63	28.76	67.71	0.44
Reach 3	746	Max WS	low_flow_10percent	540.95	391.65	393.47		393.72	0.011543	4.06	137.47	116.37	0.65
Reach 3	746	Max WS	2_year_unsteady	5716.12	391.65	397.59		398.28	0.006097	7.16	1301.67	550.82	0.58
Reach 3	746	Max WS	25_year_unsteady	11687.85	391.65	400.06		400.76	0.004673	7.91	3242.77	1256.75	0.53
Reach 3	746	Max WS	50_year_unsteady	14795.11	391.65	400.60		401.48	0.005511	9.00	3981.79	1443.51	0.58
Reach 3	746	Max WS	100_year_unsteady	16179.46	391.65	401.24		401.92	0.004166	8.25	4910.84	1453.09	0.51
Reach 3	746	Max WS	50percent_no_weir	46.36	391.65	392.31		392.35	0.007499	1.62	28.64	67.62	0.44
Reach 3	746	Max WS	25percent_no_weir	169.35	391.65	392.75		392.87	0.010235	2.74	62.62	86.81	0.56
Reach 3	746	Max WS	10percent_no_weir	245.67	391.65	392.95		393.10	0.010798	3.08	81.28	98.77	0.59
Reach 3	746	Max WS	2yr_no_weir	6654.80	391.65	398.03		398.73	0.005773	7.34	1554.29	589.71	0.57
Reach 3	746	Max WS	25yr_no_weir	12696.85	391.65	400.27		401.04	0.004934	8.28	3521.06	1364.35	0.55
Reach 3	746	Max WS	50yr_no_weir	14791.39	391.65	400.60		401.48	0.005504	9.00	3983.24	1443.52	0.58
Reach 3	746	Max WS	100yr_no_weir	16775.80	391.65	400.97		401.85	0.005395	9.19	4528.16	1452.66	0.58
Reach 3	641	Max WS	low_flow_50percent	33.98	390.96	391.39		391.44	0.015364	1.75	19.37	68.98	0.58
Reach 3	641	Max WS	low_flow_25percent	46.89	390.96	391.46		391.52	0.014840	1.94	24.17	72.14	0.59
Reach 3	641	Max WS	low_flow_10percent	526.32	390.96	392.65		392.90	0.009854	3.99	132.03	98.22	0.61
Reach 3	641	Max WS	2_year_unsteady	5717.15	390.96	397.21		397.83	0.005114	6.85	1322.50	481.85	0.54
Reach 3	641	Max WS	25_year_unsteady	11687.69	390.96	399.80		400.40	0.003693	7.46	3659.45	1358.85	0.48
Reach 3	641	Max WS	50_year_unsteady	14174.62	390.96	400.28		400.98	0.004124	8.19	4352.33	1485.71	0.51
Reach 3	641	Max WS	100_year_unsteady	16640.79	390.96	401.07		401.66	0.003389	7.87	5536.32	1507.95	0.47
Reach 3	641	Max WS	50percent_no_weir	48.00	390.96	391.47		391.53	0.013986	1.92	25.02	72.68	0.58
Reach 3	641	Max WS	25percent_no_weir	166.93	390.96	391.90		392.02	0.011356	2.73	61.18	89.54	0.58
Reach 3	641	Max WS	10percent_no_weir	240.12	390.96	392.10		392.24	0.010535	3.05	78.81	92.36	0.58
Reach 3	641	Max WS	2yr_no_weir	6631.44	390.96	397.63		398.31	0.005191	7.22	1549.81	601.19	0.55
Reach 3	641	Max WS	25yr_no_weir	12674.74	390.96	399.99		400.66	0.004012	7.89	3924.30	1439.64	0.50
Reach 3	641	Max WS	50yr_no_weir	14167.71	390.96	400.28		400.98	0.004113	8.18	4356.04	1485.90	0.51
Reach 3	641	Max WS	100yr_no_weir	16074.16	390.96	400.67		401.37	0.004101	8.41	4933.28	1494.22	0.51
Reach 3	567	Max WS	low_flow_50percent	33.86	389.83	390.78		390.80	0.002137	0.96	35.25	70.55	0.24
Reach 3	567	Max WS	low_flow_25percent	46.81	389.83	390.84		390.87	0.002861	1.18	39.80	73.13	0.28
Reach 3	567	Max WS	low_flow_10percent	521.99	389.83	392.15		392.33	0.005683	3.45	151.32	92.26	0.47
Reach 3	567	Max WS	2_year_unsteady	5718.20	389.83	396.60		397.42	0.007105	7.62	1050.34	386.43	0.63
Reach 3	567	Max WS	25_year_unsteady	11687.53	389.83	399.55		400.10	0.003559	7.08	3918.07	1475.28	0.46
Reach 3	567	Max WS	50_year_unsteady	13950.79	389.83	400.02		400.60	0.003700	7.50	4618.84	1526.25	0.48
Reach 3	567	Max WS	100_year_unsteady	14447.66	389.83	400.78		401.15	0.002351	6.33	5776.75	1527.22	0.38
Reach 3	567	Max WS	50percent_no_weir	45.19	389.83	390.91		390.93	0.001866	1.00	44.98	75.98	0.23
Reach 3	567	Max WS	25percent_no_weir	165.62	389.83	391.38		391.44	0.003822	2.00	82.82	85.18	0.36
Reach 3	567	Max WS	10percent_no_weir	239.37	389.83	391.60		391.68	0.004190	2.35	101.72	87.74	0.39
Reach 3	567	Max WS	2yr_no_weir	6489.77	389.83	397.07		397.88	0.006868	7.67	1263.42	530.52	0.62
Reach 3	567	Max WS	25yr_no_weir	11925.42	389.83	399.75		400.26	0.003259	6.89	4215.05	1508.71	0.45
Reach 3	567	Max WS	50yr_no_weir	13937.28	389.83	400.02		400.60	0.003680	7.48	4625.73	1526.25	0.48
Reach 3	567	Max WS	100yr_no_weir	15812.15	389.83	400.41		400.98	0.003591	7.62	5220.29	1526.75	0.47
Reach 3	331	Max WS	low_flow_50percent	34.05	389.45	389.88		389.97	0.026040	2.42	14.05	45.83	0.77
Reach 3	331	Max WS	low_flow_25percent	46.99	389.45	389.96		390.07	0.024096	2.65	17.73	47.69	0.77
Reach 3	331	Max WS	low_flow_10percent	517.50	389.45	391.22		391.62	0.017825	5.04	102.58	83.60	0.80
Reach 3	331	Max WS	2_year_unsteady	5719.28	389.45	396.27		397.03	0.005576	7.47	1215.75	532.21	0.57
Reach 3	331	Max WS	25_year_unsteady	11687.41	389.45	399.41		399.87	0.002611	6.86	4451.91	1516.28	0.41
Reach 3	331	Max WS	50_year_unsteady	9976.50	389.45	399.92		400.17	0.001362	5.15	5234.47	1526.83	0.30
Reach 3	331	Max WS	100_year_unsteady	11700.41	389.45	400.49		400.73	0.001308	5.25	6107.55	1532.75	0.30
Reach 3	331	Max WS	50percent_no_weir	48.88	389.45	389.96		390.08	0.026492	2.77	17.64	47.65	0.80
Reach 3	331	Max WS	25percent_no_weir	165.36	389.45	390.43		390.65	0.021354	3.76	44.03	64.01	0.80
Reach 3	331	Max WS	10percent_no_weir	240.65	389.45	390.63		390.91	0.021144	4.22	57.03	69.10	0.82
Reach 3	331	Max WS	2yr_no_weir	6477.69	389.45	396.78		397.51	0.004921	7.44	1518.85	655.30	0.54
Reach 3	331	Max WS	25yr_no_weir	8476.00	389.45	399.62		399.84	0.001202	4.73	4780.56	1520.71	0.28
Reach 3	331	Max WS	50yr_no_weir	9976.50	389.45	399.92		400.17	0.001362	5.15	5234.47	1526.83	0.30
Reach 3	331	Max WS	100yr_no_weir	11090.40	389.45	400.30		400.54	0.001326	5.22	5813.73	1532.44	0.30
Reach 4	260	Max WS	low_flow_50percent	59.07	386.21	387.37		387.46	0.008703	2.49	23.73	32.52	0.51
Reach 4	260	Max WS	low_flow_25percent	78.78	386.21	387.55		387.66	0.009271	2.60	30.31	40.85	0.53
Reach 4	260	Max WS	low_flow_10percent	670.11	386.21	389.32		389.63	0.008663	4.45	150.64	94.10	0.62
Reach 4	260	Max WS	2_year_unsteady	8364.83	386.21	394.76		395.97	0.008818	8.82	948.67	400.40	0.69
Reach 4	260	Max WS	25_year_unsteady	16952.28	386.21	397.56	396.93	399.08	0.007321	10.28	2758.04	1829.35	0.67
Reach 4	260	Max WS	50_year_unsteady	20468.86	386.21	398.62	398.20	399.72	0.005128	9.36	4948.59	2160.56	0.57
Reach 4	260	Max WS	100_year_unsteady	22425.92	386.21	399.67		400.32	0.003076	7.80	7222.58	2186.37	0.45
Reach 4	260	Max WS	50percent_no_weir	74.45	386.21	387.45		387.57	0.010328	2.80	26.54	34.59	0.56
Reach 4	260	Max WS	25percent_no_weir	209.38	386.21	388.21		388.38	0.009030	3.27	64.12	60.15	0.56
Reach 4	260	Max WS	10percent_no_weir	302.53	386.21	388.52		388.72	0.008657	3.61	83.90	68.76	0.58
Reach 4	260	Max WS	2yr_no_weir	9360.00	386.21	395.09		396.42	0.009360	9.25	1012.90	451.17	0.72
Reach 4	260	Max WS	25yr_no_weir	17496.18	386.21	397.75	397.50	399.19	0.006874	10.12	3109.50	1926.69	0.65
Reach 4	260	Max WS	50yr_no_weir	20476.94	386.21	398.62	398.20	399.72	0.005127	9.36	4952.02	2160.64	0.57

HEC-RAS Profile: Max WS (Continued)

Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach 4	260	Max WS	100yr_no_weir	23125.34	386.21	399.42		400.23	0.003833	8.56	6678.44	2184.42	0.50
Reach 4	156	Max WS	low_flow_50percent	59.07	385.59	386.84		386.87	0.002687	1.47	40.10	50.12	0.29
Reach 4	156	Max WS	low_flow_25percent	78.82	385.59	386.98		387.03	0.002903	1.65	47.69	53.16	0.31
Reach 4	156	Max WS	low_flow_10percent	646.09	385.59	388.70		388.92	0.005195	3.76	171.73	86.06	0.47
Reach 4	156	Max WS	2_year_unsteady	8366.90	385.59	394.11		395.14	0.007190	8.14	1046.93	563.33	0.65
Reach 4	156	Max WS	25_year_unsteady	16952.24	385.59	396.88	395.38	398.25	0.006327	9.79	2514.31	1596.92	0.62
Reach 4	156	Max WS	50_year_unsteady	19953.00	385.59	398.01	396.21	399.10	0.004681	9.13	4386.23	2258.20	0.54
Reach 4	156	Max WS	100_year_unsteady	22180.80	385.59	399.19		399.83	0.002804	7.61	7067.91	2301.64	0.42
Reach 4	156	Max WS	50percent_no_weir	71.55	385.59	386.88		386.93	0.003347	1.69	42.43	51.08	0.33
Reach 4	156	Max WS	25percent_no_weir	206.09	385.59	387.62		387.71	0.003885	2.40	85.99	68.26	0.38
Reach 4	156	Max WS	10percent_no_weir	300.01	385.59	387.93		388.05	0.004349	2.76	108.86	76.25	0.41
Reach 4	156	Max WS	2yr_no_weir	9346.85	385.59	394.45		395.56	0.007298	8.49	1126.05	586.48	0.65
Reach 4	156	Max WS	25yr_no_weir	17479.92	385.59	397.05	395.53	398.40	0.006147	9.77	2710.34	1798.81	0.61
Reach 4	156	Max WS	50yr_no_weir	19953.00	385.59	398.01	396.21	399.10	0.004681	9.13	4386.23	2258.20	0.54
Reach 4	156	Max WS	100yr_no_weir	22180.80	385.59	399.19		399.83	0.002804	7.61	7067.91	2301.64	0.42
Reach 4	20	Max WS	low_flow_50percent	59.05	385.18	386.18	385.85	386.24	0.006651	1.89	31.19	52.85	0.43
Reach 4	20	Max WS	low_flow_25percent	78.77	385.18	386.32	385.96	386.38	0.006645	2.05	38.51	58.05	0.44
Reach 4	20	Max WS	low_flow_10percent	642.79	385.18	387.92	387.20	388.14	0.006606	3.74	171.85	104.22	0.51
Reach 4	20	Max WS	2_year_unsteady	8369.72	385.18	393.29	391.90	394.21	0.006603	7.74	1150.50	720.11	0.61
Reach 4	20	Max WS	25_year_unsteady	16952.14	385.18	396.00	394.17	397.40	0.006602	9.74	1973.70	1482.08	0.62
Reach 4	20	Max WS	50_year_unsteady	20442.43	385.18	396.91	394.91	398.48	0.006603	10.36	2276.74	1996.14	0.63
Reach 4	20	Max WS	100_year_unsteady	24783.27	385.18	397.85	395.74	399.55	0.006603	10.98	3928.88	2204.22	0.63
Reach 4	20	Max WS	50percent_no_weir	66.49	385.18	386.24	385.90	386.30	0.006606	1.95	34.12	55.07	0.44
Reach 4	20	Max WS	25percent_no_weir	206.05	385.18	386.89	386.39	387.00	0.006620	2.67	77.08	77.54	0.47
Reach 4	20	Max WS	10percent_no_weir	298.71	385.18	387.18	386.61	387.31	0.006614	2.96	101.01	87.28	0.48
Reach 4	20	Max WS	2yr_no_weir	9338.84	385.18	393.65	392.24	394.63	0.006602	8.02	1256.30	809.84	0.61
Reach 4	20	Max WS	25yr_no_weir	17519.14	385.18	396.15	394.29	397.58	0.006602	9.85	2021.99	1560.46	0.62
Reach 4	20	Max WS	50yr_no_weir	20449.28	385.18	396.92	394.91	398.48	0.006603	10.36	2278.61	1997.08	0.63
Reach 4	20	Max WS	100yr_no_weir	24002.00	385.18	397.73	395.59	399.43	0.006603	10.91	3678.51	2199.64	0.63

APPENDIX D. ENVIRONMENTAL COMPLIANCE SUMMARY

All good (DK)

CITY OF MOLALLA, OREGON

Molalla River Drinking Water Intake

Environmental Compliance Summary

March 2025

TETRA TECH

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APPENDICES

1.0 INTRODUCTION

1.1 PROJECT UNDERSTANDING

The City of Molalla, Oregon (the City) is proposing upgrades to a drinking water supply intake at River Miles (RM) 21.6 on the Molalla River (State of Oregon 2015), which is the sole drinking water supply source for the City (City of Molalla 2021). Project actions would include removal of infrastructure within the Molalla Riverbed, installation of new permanent intakes within the riverbed, and installation of buried conveyance pipes running between the new intakes and a pumphouse located approximately 190 yards from the intakes. The proposed project includes construction in the riverbed, bank, and floodplain of the left bank of the river.

This Environmental Compliance Summary provides an evaluation of the potential environmental documentation and permitting requirements for construction and operation of the proposed project, based on preliminary designs and initial site surveys.

Key elements for an effective and timely environmental process include the following:

- Develop the design to avoid, minimize, and, *if necessary*, provide compensatory mitigation for impacts resulting from the project.
- Coordinate frequently between the environmental and engineering staff.
- Conduct regulatory agency meetings to ensure that the agencies have all the information necessary to conduct their processes in a timely fashion.
- The permits and approvals included in this Environmental Compliance Summary are based on the current understanding of the project designs and may be subject to change.
- Street use permits and trade permits may be needed (e.g., building permits, electrical, plumbing, etc.) but are not addressed in this Environmental Compliance Summary.

2.0 ENVIRONMENTAL CONDITIONS

2.1 SITE SETTING

The study area (SA) is an irregular polygon currently in use as the City's drinking water intake and pumphouse, located east of the City of Molalla drinking water treatment facility (Figure 1 Study Area). The SA is bordered by a City of Molalla property to the north and west, private property to the south, and Molalla River to the east. Site access is from an unpaved service road extending east from S. Molalla Forest Road.

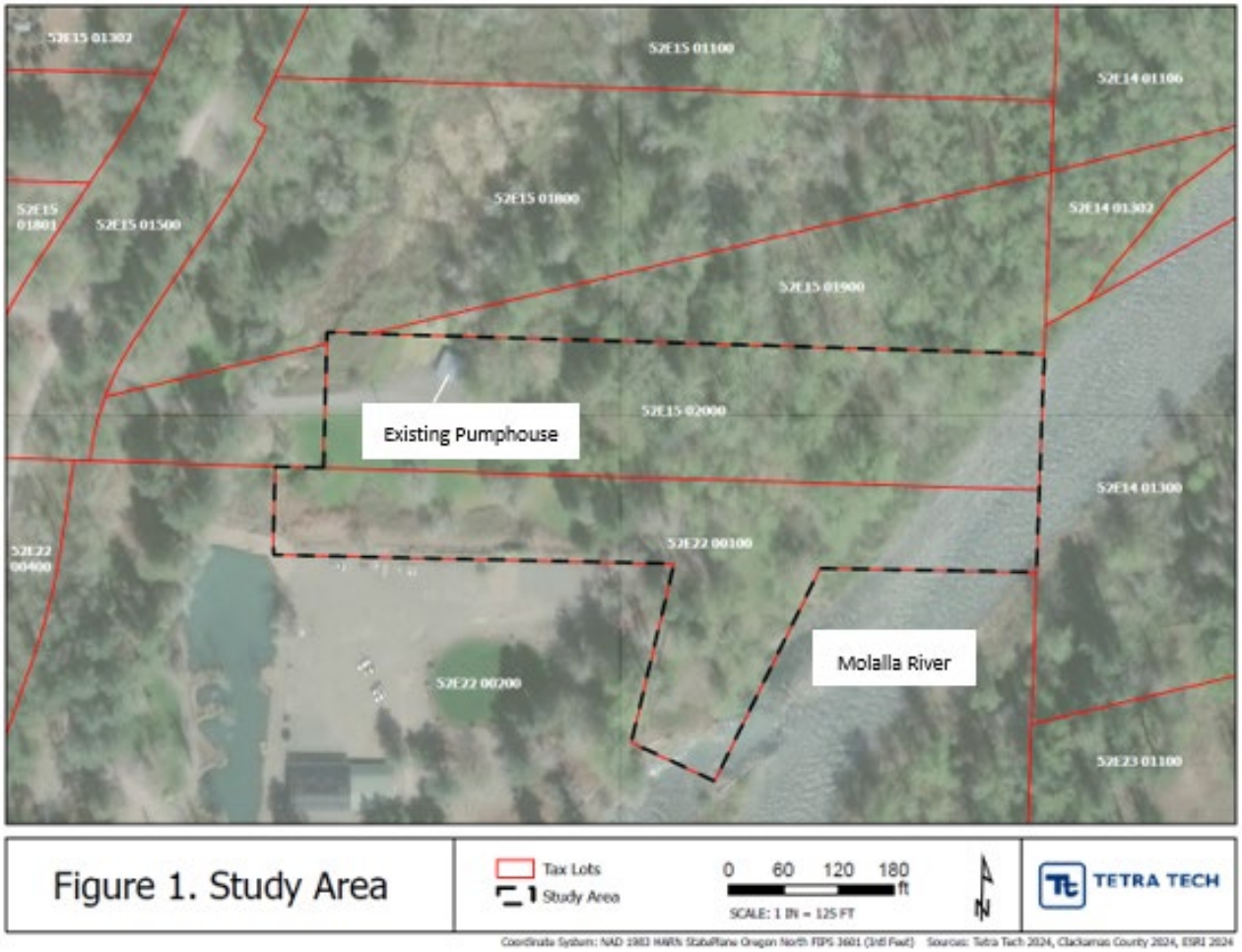
The SA is located within upper stretch of the Molalla River HUC12 watershed (HUC 170900090607) and part of the larger Lower Molalla River HUC10 watershed (HUC 1709000906) in the northwestern portion of the Molalla-Pudding HUC8 watershed (HUC 17090009). The Molalla River, a perennial stream, flows south to north on the eastern edge of the SA before its confluence with the Willamette River approximately 21 miles downstream.

Topography within the SA consists of generally flat, upland and riparian forested areas sitting approximately five to ten vertical feet above the Molalla River bottom elevation of approximately 389

feet, with remaining lower elevation historic floodplain channels (elevations matching OHWM) within the SA. Elevations within the SA range from approximately 390 feet on the banks of the Molalla River to approximately 400 feet, on a raised road/berm where the water intake pumphouse is located. There are multiple slopes within the SA that exceed 20% along the incised riparian banks along the Molalla River to the east, and along the raised access road and berm of the water intake pumphouse location, where slopes lead down into low-lying areas and wetlands located offsite.

Land use in the immediate surrounding area includes the city limits and urban growth boundary for the City of Molalla to the northwest but is dominantly agricultural/forest district and exclusive farm use historical landmark otherwise (ORMAP 2024).

Figure 1 Study Area



2.2 JURISDICTIONAL WATERS

Tetra Tech biologists performed a wetland delineation at the study area on November 7, 2024. As described in the corresponding wetland delineation report (Tetra Tech 2024), the delineation identified three areas of jurisdictional wetlands totaling 0.183 acres, and one area of non-wetland other waters of the U.S. that was measured at 592 feet in length. Two of the wetlands are palustrine forested wetlands and the third is a palustrine scrub-shrub wetland, all classified as HGM class: Riverine Impounding. The non-wetland other waters are classified as HGM class: Riverine Lower Perennial.

The wetland delineation report was submitted to the U.S. Army Corps of Engineers (USACE) and Oregon Department of State Lands (DSL) for concurrence on January 3, 2025. The DSL file number is WD2025-0005. Agency concurrence has not yet been received; however, it is considered likely that some of the wetlands and the noon-wetlands waters will fall under the jurisdiction of both agencies.

2.3 CULTURAL RESOURCES

A cultural resources study has not yet been completed for the SA. Given the SA's location in the floodplain of the Molalla River, there is a high probability of previously-recorded cultural resources in the area. A cultural resources study will include database searches, foot surveys, and inventory of the built environment. The cultural resources study should be conducted following preferred design alternative selection and 30% engineering design completion.

2.4 ENDANGERED SPECIES

Two species listed as Threatened under the Endangered Species Act (ESA) are found in the Molalla River, and the river is also designated critical habitat for them. These species include Upper Willamette River ESU – Winter Run Chinook salmon *(Oncorhynchus tshawytscha)* and Upper Willamette River DPS - Winter Run steelhead trout *(O. mykiss).* Both of these species are regulated by the National Marine Fisheries Service (NMFS) and are likely to be found in the SA.

Other listed species that may occur in the vicinity of the SA include the Northern spotted owl *(Strix occidentalis caurina) (*threatened [T]*),* streaked horned lark *(Eremophila alpestris strigata)* [T]*,* Fender's blue butterfly *(Icaricia icarioides fenderi)* [T], Kincaid's lupine *(Lupinus sulphureus* ssp. *Kincaidii)* [T], and Willamette daisy *(Erigeron decumbens)* (endangered[E]). Of these species, only the streaked horned lark has potential habitat in the SA. The Northern spotted owl requires intact old growth forest habitat, and the remaining species are typically found only in prairie grasslands. The streaked horned lark prefers gravelly meadows with sparse vegetation, a habitat type found in close proximity to the SA.

The Molalla River is also designated as Essential Fish Habitat under the Magnuson-Stevens Fishery Conservation and Management Act.

3.0 ANTICIPATED ENVIRONMENTAL PERMITS AND LAND USE REVIEWS

Removal of the intakes found within the river and replacement of the conveyance pipeline to the pumphouse will occur in areas that contain resources regulated under multiple federal and state regulations and will require corresponding permits or authorizations. Permits and authorizations that are anticipated to be required for the intake replacement are described in the following sections.

3.1 FEDERAL PERMITS AND AUTHORIZATIONS

3.1.1 CLEAN WATER ACT

USACE's Regulatory Branch is the issuing agency for the Clean Water Act (CWA) Section 404 permits. A Section 404 permit or authorization from USACE is required in accordance with the provisions of Section 404 of the CWA when dredged or fill material is discharged into waters of the U.S. The USACE Nationwide Permit (NWP) Program provides approval for a standard set of activities in wetlands and waters that have routine and known impacts, and which fall under a certain size standard (1/2 acre in most cases). For projects that do not qualify for a NWP, USACE requires an Individual Permit and will apply all applicable substantive legal requirements, including public notice, opportunity for public hearing, and application of Section 404 (b) (1) guidelines.

In this instance, it is likely that the USACE will authorize the proposed project under NWP #3(a), which authorizes "repair, rehabilitation, or replacement of previously authorized , currently serviceable structures or fills", and/or 3(b), which authorizes "discharges associated with removal of accumulated sediments and debris in the vicinity of existing structures, including intake and outfall structures and associated canals". They may also utilize NWP #58, which authorizes "activities required for the construction, maintenance, repair, and removal of utility lines for water and other substances…".

If no jurisdictional wetlands would be affected by the project, the USACE would likely permit the project under Section 10 of the Rivers and Harbors Act (RHA), which requires authorization for projects that may affect a navigable waterway. Permitting requirements are the same as under a CWA permit.

3.1.2 NATIONAL HISTORIC PRESERVATION ACT SECTION 106

Section 106 of the National Historic Preservation Act (NHPA) requires federal agencies to consider the impacts of their actions on historic properties. The NHPA provides a process (known as the Section 106 process) that enables agencies to assess impacts on historic properties along with participation from interested and affected parties such as tribes, and then avoid, minimize, or mitigate for these impacts. Historic properties may be pre-contact or historic sites, including objects and structures that are included in or eligible for inclusion in the National Register of Historic Places (NRHP). Historic properties also include artifacts or remains within historic sites and properties of traditional and cultural importance to tribes.

The USACE will be the lead agency for consultation under the NHPA. Prior to issuing a CWA or RHA permit, the USACE would require evidence of compliance with Section 106 of the NHPA. Compliance requirements would include performing a database search and field survey to document the potential existence of protected cultural or historical resources, coordinating with the Oregon State Historic Preservation Officer (SHPO), notifying tribes of the proposed project, and preparing an inadvertent discovery plan. This process must be completed before the USACE will issue a permit or authorization.

3.1.3 ENDANGERED SPECIES ACT SECTION 7

Requirements of the Endangered Species Act (ESA) ensure activities authorized, funded, and carried out by federal agencies are not likely to jeopardize the continued existence of any listed species or result in adverse impacts to designated critical habitat of a listed species. Section 7(a) of the ESA requires federal agencies to ensure that the actions they authorize, fund, and carry out do not jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of critical habitat. Section 7(c) of the ESA requires that federal agencies initiate consultation and prepare biological assessments addressing the potential impacts of their actions on listed or proposed

endangered species and critical habitats. Consultation with NMFS would also include an evaluation of effects to Essential Fish Habitat, as defined by the Magnuson-Stevens Fishery Conservation and Management Act. In-water actions such as removing and replacing intakes and adding stabilizing materials, and actions in the floodplain and riparian areas such as excavating pipelines and removing riparian species, will be evaluated by NMFS for impacts to listed species and Essential Fish Habitat.

The USACE would be the lead agency for ESA consultation with the U.S. Fish and Wildlife Service and NMFS (Services). Conservation measures specified to minimize impacts to listed species would be incorporated into the project design and construction methods. Final decisions on the ESA consultation will be made by USACE, in coordination with the Services.

Because this project would occur within regulated critical habitat for multiple runs of listed anadromous fish, and because it will likely result in creation of impervious surfaces, it will likely require formal consultation with NMFS. The possible presence of streaked horned lark habitat in proximity to the SA may also trigger formal consultation with USFWS. Formal consultation under Section 7 requires preparation of a Biological Assessment, a mitigation plan, and coordination with the Services for a Biological Opinion and Incidental Take Statement. Early coordination with the Services is recommended prior to submitting documentation to explain the project, potential construction, and operational impacts to ESA-listed species.

3.1.4 NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM PERMIT

Construction Stormwater General Permits are issued by the Oregon State Department of Environmental Quality (DEQ). The National Pollution Discharge Elimination System (NPDES) stormwater program requires permits from construction activities that disturb one or more acres and have the potential to discharge stormwater runoff into wetlands and waterbodies. The total of disturbed areas and the potential to discharge would need to be determined as designs are developed. A Stormwater Pollution and Prevention Plan would also be developed to demonstrate project specific compliance with the general permit.

3.2 STATE REQUIREMENTS

3.2.1 OREGON REMOVAL-FILL LAW

Oregon's Removal-Fill Law (Oregon Revised Statutes [ORS] 196.795-990) was enacted in 1967 to ensure protection and best uses of Oregon’s water resources for home, commercial, wildlife habitat, public navigation, fishing, and recreational uses. This law requires a permit to be obtained when material is proposed to be added to or removed from a wetland or waterway. Compliance with this law requires documentation of the extent of wetlands and waters of the state, as well as a functional assessment.

Generally, a permit is required whenever fill or removal in the amount of 50 cubic yards or more is proposed. In Oregon, USACE and DSL offer a Joint Permit Application, submitted to both agencies, so that processing can happen concurrently. In addition, DEQ and USACE offer a single public notice process for the USACE permit and the DEQ 401 Water Quality Certification (WQC). Applying and communicating with USACE, DEQ and DSL at the same time would allow better coordination among all involved agencies and result in a smoother permit process.

3.2.2 FISH PASSAGE APPROVAL

Fish passage approval laws (OAR 635-412-0010 through OAR 635-412-0040) require that upstream and downstream passage is provided at all artificial obstructions in Oregon waters where migratory native

fish are currently or have historically been present. In any project that proposes to modify or introduce fish passage obstructions, the fish passage approval law requires that the owner/operator obtain one of the following from the Oregon Department of Fish and Wildlife (ODFW): 1) approval for a passage plan when passage will be provided, 2) a waiver from providing passage, or 3) an exemption from providing passage. It is likely that the proposed project will receive approval for a passage plan as it is not likely to block fish passage.

3.2.3 CLEAN WATER ACT SECTION 401 WATER QUALITY CERTIFICATION

Section 401 of the CWA gives states and tribes the authority to issue state WQC for projects that that may result in a discharge to waters of the U.S. and require a federal license or permit. The certification states that the discharge will comply with applicable provisions of the CWA, including state water quality standards. Oregon's water quality standards specify the designated use of a waterbody (e.g., for water supply or recreation), pollutant limits necessary to protect the designated use (in the form of numeric or narrative criteria), and policies to ensure that existing water uses would not be degraded by pollutant discharges. Information on construction methods and proposed best management practices (BMPs) will be needed to assess short-term water quality considerations for construction. In addition, the City will need to submit an on-line Pre-Filing Meeting Request to DEQ at least 30 days prior to submission of the 401 Certification Request, as required under 401 certification rules. The federal CWA permit cannot be issued until a 401 WQC is received.

DEQ will review the project's Joint Permit Application for compliance with state water quality standards and grant certification if the project would comply with these standards. The WQC will stipulate general and specific conditions that must be implemented during construction and operations to protect water quality and wetlands.

3.3 LOCAL REQUIREMENTS

3.3.1 COUNTY ZONING/LAND USE REGULATIONS

Any project measures proposed for implementation on lands owned by Clackamas County must be consistent with the County's land use policies and zoning regulations. Land use policies and zoning codes are identified in the County's Comprehensive Plan. Specific sections of the Comprehensive Plan describe policies regarding land use and use and protection of open spaces and natural resources. The project may require a land use consistency review and affidavit of compliance from the County.

4.0 REFERENCES

City of Molalla. 2021. *Water Management, Conservation, and Water System Master Plan.* Retrieved from www.cityofmolalla.com/sites/default/files/fileattachments/public_works/page/1761/wmcwsmp_adopted_20210526_ord_2021-08.pdf

Oregon, State of. 2015. Hydrography Dataset. Available at: quad rivermiles | Oregon GEOHub. Last updated October 5, 2015.

Oregon, State of. 2024. The Oregon Map (ORMAP). Assessor tax lot maps. Available at: http://www.ormap.net/. Accessed November 2024

Tetra Tech. 2024. DRAFT Molalla Intakes Wetland Delineation Report. Prepared for the City of Molalla. December, 2024.

APPENDIX A: ENVIRONMENTAL MATRIX

Environmental Approval	Issuing Agency	Addresses	Application Procedure	Estimated Approval Timeline	Alternative (s)
Environmental Documentation					
ESA Section 7 Consultation/ Magnuson - Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation	NOAA Fisheries and US Fish and Wildlife Service	• Appropriate handling of listed fish during fish salvage, if needed • Disruption of breeding, spawning, rearing, or foraging activities • Construction-related turbidity • Construction-related vegetation removal • Changes in water quality	• Field reviews needed to determine if ESA listed species or species of concern and/or habitat is present • USACE will submit the Biological Assessment to the Services	• 12 months+	• Formal consultation expected for alternatives that would require construction in waters of the U.S. • Dependent upon in water work construction methods • Potential effects on additional ESA listed species and habitat would be verified through fieldwork
Section 106 of the NHPA	SHPO, in coordination with USACE	• Impacts to historic or cultural resources • Coordination to ensure implementation of inadvertent discovery protocols including appropriate notification and	• SHPO database search • Pedestrian and shovel surveys may be needed based on results of database search and coordination with tribes • Cultural or historic resources would be recorded with SHPO	• 3 months	• Applies to all project alternatives

Environmental Approval	Issuing Agency	Addresses	Application Procedure	Estimated Approval Timeline	Alternative (s)
		consultation procedures	and coordinated with tribes		
Permits					
Section 401 Water Quality Certification	OR DEQ	• Impacts to water quality, esp. turbidity, during construction • Potential for erosion during construction • Potential for spills of hazardous materials into waterways	• Apply through JPA • Demonstrate compliance with General Conditions and Regional Conditions for work in regulated waters	• Concurrent with USACE Permit issuance	• Applies to project alternatives that may impact identified wetlands or water bodies including impacts from the diffuser and outfall improvements
Oregon Removal-Fill Permit	OR DSL	• Identification of regulated waters and jurisdictional boundaries • Consideration of multiple alternatives to avoid and minimize impacts • Source and volume of material to be used as fill, if any • Volume of excavated material and disposal procedure	• Apply through JPA • Demonstrate compliance with General Conditions and Regional Conditions for work in regulated waters	• Concurrent with USACE Permit issuance	• Applies to project alternatives that may impact identified wetlands or water bodies including impacts from the diffuser and outfall improvements

Environmental Approval	Issuing Agency	Addresses	Application Procedure	Estimated Approval Timeline	Alternative (s)
Fish Passage Approval	ODFW	• Construction occurs only during in-water work windows specified by ODFW and NMFS • Disruption of fish passage capabilities • Construction-related vegetation removal	• Apply through JPA and ODFW online FPA submittal process • Address impacts to fish passage • Prepare fish salvage plan if work area will be isolated from Molalla River	• ODFW has 45 calendar days to issue FPA once application is complete	• Applies to replacement and operation of intakes in the Molalla River
CWA Section 404	USACE	• Would verify wetland delineation • Impacts to waters of the U.S. • Consideration of alternatives to avoid and minimize impacts • NWPs issued for specific categories of work	• Prepare wetland delineation and attain jurisdictional determination if needed • Develop mitigation plan for impacts to Waters of the US if required • 60% construction drawings • Demonstrate compliance with Section 106 of NHPA, ESA Section 7 • Submit JPA	• Completeness review within 30 days after submittal of complete JPA. • USACE determines if activity meets federal criteria and any applicable regional conditions to authorize use of NWP • The permit is issued after ESA and Section 106	• Applies to replacement of intakes and pipeline features in floodplain

Environmental Approval	Issuing Agency	Addresses	Application Procedure	Estimated Approval Timeline	Alternative (s)
				consultations are complete	
NPDES Construction Stormwater General Permit	OR DEQ and U.S. EPA	• Project site 1 acre or more and has the potential to discharge to jurisdictional waters	• Development of a Stormwater Pollution Prevention Plan	• 120 days	• Applies to any alternative that would disturb one or more acres and discharge stormwater runoff into waterbodies including wetlands

APPENDIX E. WETLANDS DELINEATION REPORT

WETLAND DELINEATION / DETERMINATION REPORT COVER FORM

A complete report and signed report cover form, along with applicable review fee, are required before a report review timeline can be initiated by the Department of State Lands. All applicants will receive an emailed confirmation that includes the report's unique file number and other information.

Ways to submit report:

- **Under 50MB** - A single unlocked PDF can be emailed to: wetland.delineation@dsl.oregon.gov.
- **50MB or larger** - A single unlocked PDF can be uploaded to DSL's Box.com website. After upload notify DSL by email at: wetland.delineation@dsl.oregon.gov.
- OR a hard copy of the unbound report and signed cover form can be mailed to: Oregon Department of State Lands, 775 Summer Street NE, Suite 100, Salem, OR 97301-1279.

Ways to pay review fee:

- By credit card on DSL's epayment portal after receiving the unique file number from DSL's emailed confirmation.
- By check payable to the Oregon Department of State Lands attached to the unbound mailed hardcopy OR attached to the complete signed cover form if report submitted electronically.

Contact and Authorization Information

☒ Applicant ☐ Owner Name, Firm and Address:
Maya Taylor
Tetra Tech
1750 S. Harbor Way
Portland, OR 97201

Business phone # 503-721-7226
Mobile phone # (optional)
E-mail: maya.taylor@tetratech.com

☐ Authorized Legal Agent, Name and Address (if different):

Business phone #
Mobile phone # (optional)
E-mail:

I either own the property described below or I have legal authority to allow access to the property. I authorize the Department to access the property for the purpose of confirming the information in the report, after prior notification to the primary contact.

Typed/Printed Name: Mac Corthell **Signature:** _____

Date: 12/20/2024 Special instructions regarding site access: Please notify applicant prior to site entry

Project and Site Information

Project Name: Molalla Water Intake Pre-Design Services

Latitude: 45.1287583 Longitude: -122.5401553
decimal degree - centroid of site or start & end points of linear project

Proposed Use:
Drinking water intake infrastructure upgrade

Tax Map # 52E15
Tax Lot(s) 2000

Tax Map # 52E22
Tax Lot(s) 100

Project Street Address (or other descriptive location):
East of Molalla Water Treatment Plant (32899 S Molalla Forest Rd) along the Molalla River

Township 5S Range 2E Section 15/22 QQ

Use separate sheet for additional tax and location information

City: Molalla, OR County: Clackamas

Waterway: Molalla River River Mile: 22.6

Wetland Delineation Information

Wetland Consultant Name, Firm and Address:
Kim Sanderford
Tetra Tech
1750 S Harbor Way
Portland, OR 97201

Phone # (503) 721-7216
Mobile phone # (if applicable) (623) 521-0816
E-mail: kim.sanderford@tetratech.com

The information and conclusions on this form and in the attached report are true and correct to the best of my knowledge.

Consultant Signature: Date: 11/27/2024

Primary Contact for report review and site access is ☒ Consultant ☐ Applicant/Owner ☐ Authorized Agent

Wetland/Waters Present? ☒ Yes ☐ No Study Area size: 5.11 acres Total Wetland Acreage: 0.1830

Check Applicable Boxes Below

☐ R-F permit application submitted
☐ Fee payment submitted **$** _____
☐ Mitigation bank site
☐ Resubmittal of rejected report ($100)
☐ EFSC/ODOE Proj. Mgr: _____
☐ Request for Reissuance. See eligibility criteria. (no fee)
DSL # _____ Expiration date_____
☐ Wetland restoration/enhancement project (not mitigation)
☐ Previous delineation/application on parcel
If known, previous DSL # _____
☐ LWI shows wetlands or waters on parcel
Wetland ID code _____

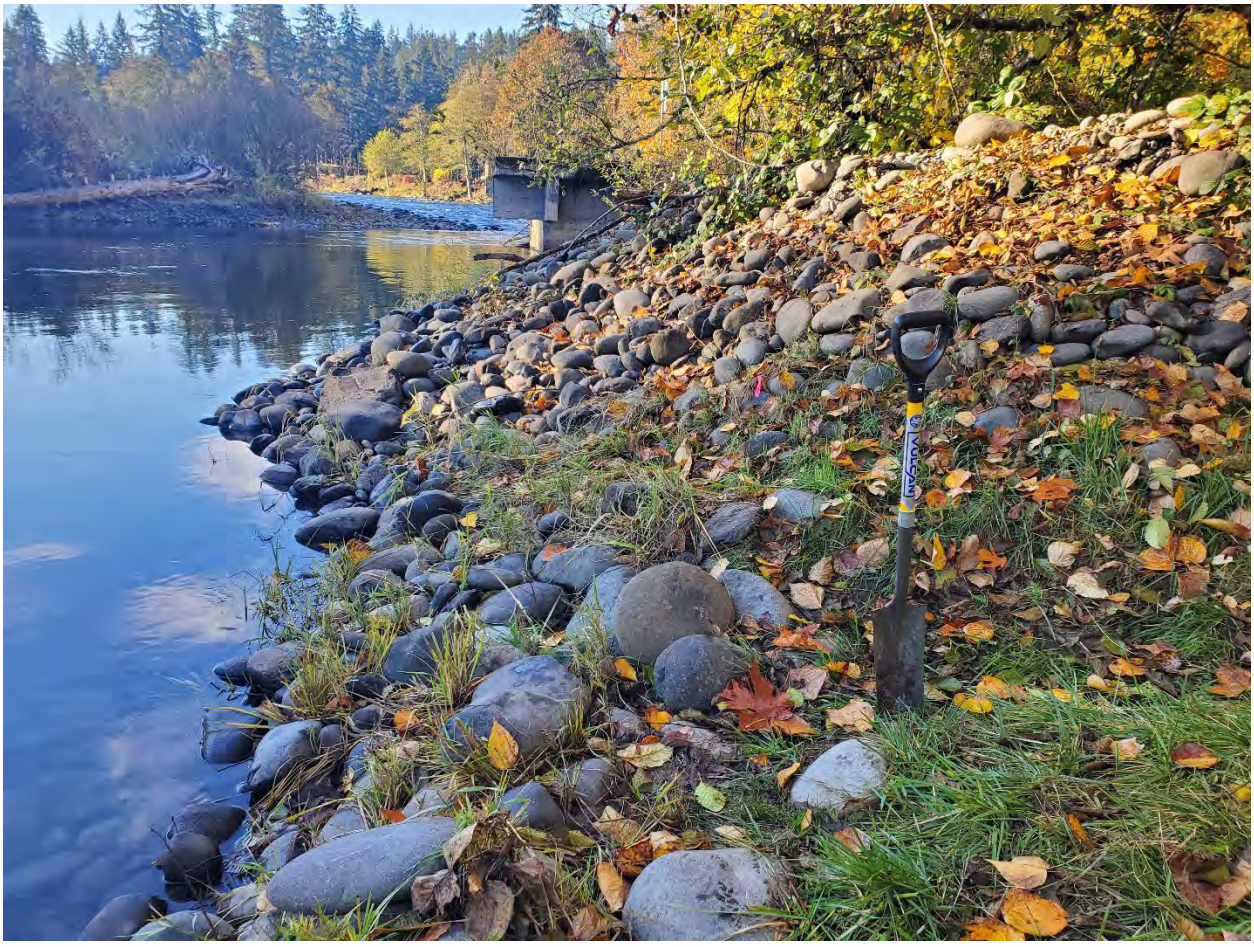
For Office Use Only

DSL Reviewer: _____ Fee Paid Date: ____/____/____ DSL WD # _____

Date Delineation Received: ___/___/___ ☐ ☐ DSL App.# _____

WETLAND DELINEATION REPORT

City of Molalla Water Intake Pre-Design Services



City of Molalla Public Works Department

117 N. Molalla Avenue

Molalla, OR 97038

TETRA TECH

December 2024

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TABLES

ACRONYMS/ABBREVIATIONS

Acronyms/Abbreviations	Definition
CWA	Clean Water Act
DSL	Oregon Department of State Lands
NRCS	Natural Resources Conservation Service
NWI	National Wetland Inventory
OHWM	Ordinary High Water Mark
ORWAP	Oregon Rapid Wetland Assessment Protocol
SFAM	Stream Functional Assessment Method
USACE	U.S. Army Corps of Engineers
WETS	Wetland Climatic Data

1.0 PROJECT BACKGROUND AND OBJECTIVES

1.1 OVERVIEW OF PROPOSED PROJECT

This wetland delineation report has been prepared in support of the proposed action of *Water Intake Pre-Design Services*. The City of Molalla, Oregon (City) is proposing this new infrastructure in support of planned upgrades to their drinking water intake infrastructure.

The purpose of this report is to present the findings of an office and field study with the objective of determining the presence and verifying the locations and areas of federal and state jurisdictional wetlands and other waters of the U.S. Once approved by regulatory agencies, these findings will allow the City and its project team to understand the potential impacts to Wetlands and Other Waters of the US (WOTUS) associated with their design and allow the design to avoid and/or minimize impacts.

1.2 COMPLIANCE WITH REGULATORY REQUIREMENTS

This delineation and report follow guidance provided by, and is intended to satisfy the requirements of, the following entities:

U.S. Army Corps of Engineers (USACE):

- *Wetland Delineation Manual Technical Report Y-87-1* (USACE 1987)
- *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0)* (USACE 2010)
- *National Ordinary High Water Mark Field Delineation Manual for Rivers and Streams, Interim Version* (USACE 2022)

Oregon Department of State Lands (DSL):

- *A Guide to the Removal-Fill Permit Process* (DSL 2019)
- *OAR 141-090-0035* (DSL, 2021)

2.0 LANDSCAPE SETTING AND LAND USE

2.1 SITE DESCRIPTION AND LANDSCAPE SETTING

This wetland delineation report focuses on a 4.7-acre area consisting of tax lot 100 in Section 22, and tax lot 2000 in Section 15, all within Township 5 South Range 2 East in unincorporated Clackamas County, approximately 1.5 miles from the city limits of Molalla, Oregon (Figure 1). The study area (SA) is an irregular polygon currently in use as the City's water drinking water intake and pumphouse location, located east of the City of Molalla drinking water treatment facility. The SA is bordered by a City of Molalla property to the north and west, private property to the south, and Molalla River to the east. Site access is from an unpaved service road extending east from S. Molalla Forest Road.

The SA is located within upper stretch of the Molalla River HUC12 watershed (HUC 170900090607) and part of the larger Lower Molalla River HUC10 watershed (HUC 1709000906) in the northwestern portion of the Molalla-Pudding HUC8 watershed (HUC 17090009). The Molalla River, a perennial stream, flows south to north on the eastern edge of the SA before its confluence with the Willamette River approximately nineteen miles downstream.

Topography within the SA consists of generally flat, upland and riparian forested areas sitting approximately five to ten vertical feet above the Molalla River bottom elevation of approximately 389 feet, with remaining lower elevation historic flood plain channels (elevations matching OHWM) within the SA. Elevations within the SA range from approximately 390 feet on the banks of the Molalla River to approximately 400 feet, on a raised road/berm where the water intake pumphouse is located. There are multiple slopes within the SA that exceeds 20% along the incised riparian banks along the Molalla River to the east, and along the raised access road and berm of the water intake pumphouse location, where slopes lead down into low-lying areas and wetlands located offsite.

Land use in the immediate surrounding area includes the city limits and urban growth boundary for the City of Molalla to the northwest but is dominantly agricultural/forest district and exclusive farm use historical landmark otherwise (ORMAP, 2024).

2.2 SITE ALTERATIONS

The site has been used as the City's drinking water intake facility since at least the early 1990's, with alterations to the water intake infrastructure taking place in the late 1990's, rerouting the intake system and pumphouse location to its current location today (City of Molalla, 2021). An existing rock diversion weir was modified during such alterations to ensure water supply and now plays a subsequent role in baking up water for the intake location. It is currently maintained by the owners of the neighboring property to create a swimming hole.

Historically, the SA was a flood plain and side channel of the Molalla River. In review of aerial imagery dating back to the 1950s, the channel of the Molalla River is consistent to the current channel today with dense canopy and forested areas within the SA. Evidence of infrastructure construction (roads) starting the SA in the 1980s is present in imagery. The building of the bridge crossing at Dickey Prairie Road, with the photo evidence of the bridge dating back to the 1950s, influenced the channel and floodplain of the Molalla River.

2.3 EXISTING CONDITIONS

2.3.1 PLANT COMMUNITIES

Plant communities within the SA are generally either upland forested, palustrine forested or scrub-shrub wetland, or riparian directly adjacent to the Molalla River. Also, a large portion of the southern tax lot, surrounding the water intake infrastructure and associated road, consists of a maintained lawn area.

Most of the site consists of the forested upland plant community in the north/northeastern sections of the SA and maintained areas along the water intake pipe infrastructure access route in the central and southern sections of the SA.

Within the maintained water intake area, there was approximately 60% canopy cover of black cottonwood (*Populus trichocarpa*), western red cedar (*Thuja plicata*), Oregon white oak (*Quercus garryana)*, Douglas fir (*Pseudotsuga* menziesii), and grand fir (*Abies grandis)* with a mowed and maintained herbaceous layer mature of false dandelion (*Hypochaeris radicata*), sheep's sorrel (*Rumex acetosella*), Queen Anne's lace (*Daucus carota*), Alaska brome (*Bromus sitchensis*) various other grasses (*Poa sp., Agrostis sp.*), and herb-robert (*Geranium robertianum*) noted throughout (Photo 1).

The plant community between Wetlands B and C (Figure 5, Photo 2) is forested upland habitat consisting of with a 70% canopy cover of black cottonwood, Oregon ash *(Fraxinus latifolia*), western red cedar, and an understory with sword fern (*Polystichum munitum*), snowberry (*Symphoricarpos albus*), English holly (*Ilex aquifolium*), and vine maple (*Acer circinatum*). The plant community east of Wetland C, up to the riparian area adjacent to the Molalla River, consisted of 30-60% canopy cover of black cottonwood*,* western red cedar, big leaf maple *(Acer macrophyllum),* red alder *(Alnus rubra*). The understory consisted of 50-percent or greater cover of Himalayan blackberry (*Rubus armeniacus*); as well as beaked hazelnut (*Corylus cornuta*) and Pacific ninebark (*Physocarpus capitatus)* noted throughout. The herbaceous stratum consisted trailing blackberry (*Rubus ursinus*) and field horsetail (*Equisetum arvense)*.

The plant community within the riparian area adjacent to the Molalla River consisted of approximately 50-100% canopy cover of black cottonwood, red alder, big leaf maple, and various willow species including Sitka willow (*Salix sitchensis*). The understory consisted of generally 50% or greater cover of Himalayan blackberry; as well as ocean spray (*Holodiscus discolor),* clustered rose *(Rosa pisocarpa),* salmon berry (*Rubus spectabilis*), herb-robert, and blue wildrye (*Elymus glaucus)* noted throughout (Photo 3). There was reed canary grass (*Phalaris arundinacea)* presence at OWHM but became less dominant in willow forested edge.

An in-channel island is present south of the SA (Photo 4). From observation across the channel, the plant community within the island consisted of willow species (*Salix fluviatilis, S. sp.),* Pacific ninebark, Scotch broom (*Cytisus scoparius)*, reed canary grass, rose spirea (*Spiraea douglasii),* and tansy ragwort (*Jacobaea vulgaris*). The island was inaccessible due to high water flows.

2.3.2 SOILS

One soil map unit, Camas gravelly sandy loam, is mapped for the SA (NRCS Soil Survey, Table 1, Figure 3). The mapped soil series is consistent with onsite soil observations, which were primarily silty and sandy loams throughout, with higher clay content in areas determined to be wetlands.

Table 1**.** NRCS Mapped Soils within SA

Map Unit Symbol	Map Unit Name	Hydric Rating

11	Camas gravelly sandy loam	2% hydric components

2.3.3 HYDROLOGY

Site hydrology is primarily from the waters of the Molalla River, the major waterway in the region, and artificial outputs from the drinking water pipe infrastructure and pumpstation in which pumped river water is backflushed out of the pump system for fifteen minutes, everyday year-round (discussed with Molalla Public Works employee onsite). Additional site hydrology is from seasonal precipitation and subsurface flow towards the Molalla River in drier months from higher elevations.

The Molalla River is a 51-mile-long gauged perennial stream with high peak flows coinciding with the heavier rainfall periods in winter and low flows in the summer. The closest river gage station just upstream of the SA (USGS Gage Station 14199000) recorded a mean annual flow of 1,010 cubic feet per second from years 1906-1950 (USGS 2024). The river flows generally from south/southeast to north, as it meanders to the confluence with the Willamette River approximately nineteen miles downstream from the SA. An area of approximately 203 square miles drains to the stream location within the SA, with a contributing basin to the south and east, generally southwest and adjacent to the contributing basin of the Clackamas River (USGS 2024).

A rock weir maintained by area landowners below (downstream of) the in-channel island backwaters flows up the side channel where current water intake screens are located (Photo 4, Figure 5).

3.0 PRECIPITATION DATA AND ANALYSIS

The nearest NOAA Climatological Station to the study area with sufficient historical climate and recent precipitation data is the Silverton, OR WETS Station. This monitoring station is located approximately 14 miles southwest of the study area at a slightly lower elevation but without major topographic separation.

Precipitation during the months preceding this delineation was within the 30 and 70 percent exceedance values for April through June and was below the exceedance values for July (Table 2). The Water Year to Date (WYTD) was 54.11% of normal (based on years 1994-2024), with average precipitation values for the month of April above 100% of normal, and average precipitation values for the months of May, June, and July all less than 30% of normal (Table 2).

Field work for this delineation was conducted on November 7, 2024, with no precipitation recorded the previous day, 1.31 inches of precipitation recorded the preceding 7 days, and 3.92 inches over the past 2 weeks (Table 3).

Table 2. Monthly precipitation (inches) totals, average, and range for months prior to November survey

Statistic	July	Aug	Sept	Oct	2025 WYTD
Total Precipitation	0.09	0.90	0.60	5.11	5.75
Normal[1] Precipitation	0.36	0.51	1.82	4.26	5.57
Percent of Normal[1]	25%	176%	32%	120%	103%
30-70% Normal[1] Range	0.14-0.41	0.16-0.55	0.81-2.22	2.96-5.07	-
Comparison to Normal[1] Range	Below	Above	Below	Above	-

[1]Normal WETS calculated using years 1994-2024

Table 3. Precipitation (inches) for one, seven and 14 days prior to field delineation dates

Delineation Date	One Day Prior	7 Days Prior	14 Days Prior
November 7, 2024	0	1.31	3.92

4.0 METHODS

Before the field delineation effort, Tetra Tech biologists reviewed relevant data, including the following:

- National Wetland Inventory (NWI)
- The web soil survey for Clackamas County, Oregon (NRCS)
- Aerial Imagery 1953-2024 (USGS)
- LiDAR (DOGAMI)
- ORWAP report generated for the study area

This wetland delineation was conducted via field investigations following the 1987 *Corps of Engineers Wetland Delineation Manual* (USACE manual) (USACE 1987), and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (Version 2.0) (Regional Supplement) (USACE 2010). Wetland ratings were performed using the *Manual for the Oregon Rapid Wetland Assessment Protocol (ORWAP)* Version 3.2 (Adamus and Verble 2020), and stream ratings were performed using the Stream Function Assessment Method (SFAM) for Oregon User Manual Version 2.0 (Nadeau et al. 2024).

In general, the routine methodology described in the USACE manual (USACE 1987) and Regional Supplement (USACE 2010) was utilized for the field investigation. Supporting resources included *Munsell Soil Color Charts* (Munsell 2010) and the *Wetland Training Institute 2013 Pocket Guide to Hydric Soil Field Indicators* (WTI 2017). Wetland plant indicator status was obtained from the U.S. Army Corps of Engineers *Western Mountains, Valleys & Coast 2020 Regional Wetland Plant List* (USACE 2020). Wetland areas were classified according to the USFWS's *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al. 1979).

The delineation field work was performed on November 7th, 2024. During the formal delineation, likely upland and wetland plots were selected and sampled throughout the site to characterize community properties and to facilitate wetland boundary identification. In general, data plots corresponded to locations with clear breaks of topography, vegetation, and/or hydrologic features.

At each data plot, indicators of vegetation, hydrology, and soils were documented. For vegetation, percent cover was estimated for all plant species present in each stratum, and dominants were calculated based on their cover within each stratum. Soil test pits were dug to a standard depth of 16 inches for determination of both wetland hydrology and hydric soil indicators unless met by refusal. Soil horizons and textures were identified for each data plot and soil matrix and mottle colors, if present, were determined using Munsell® Soil Color Charts (Munsell 2010). All data plots were GPS-located using an Arrow 100® submeter global navigation satellite system receiver paired with an iPad running ESRI Field Maps. ESRI shapefiles were exported to create required delineation figures.

5.0 DESCRIPTION OF ALL WETLANDS AND OTHER NON-WETLAND WATERS

Data was recorded at nine data plots located throughout the study area based on the site topography, hydrology, and locations of mapped hydric soils. Three wetlands are partially within the study area, extending offsite to the west and north (Figure 5). The Ordinary High-Water Line (OHWL) of the Molalla River extends into the SA at the eastern extent of the SA.

Camas gravelly sandy loam is mapped for the whole area of the SA. Camas soils occur on flood plains at elevations of 50 to 3,000 ft, with slopes ranging from 0-5%. The soils are formed in gravelly and very gravelly coarse textured alluvium of mixed mineralogy with an excessively drained, slow runoff and very rapid permeability drainage and permeability class (NRCS Soil Series, 2024).

5.1 WETLAND DESCRIPTIONS

5.1.1 WETLAND A

Wetland A is a 0.005-acre palustrine scrub-shrub deciduous wetland (PSS6), or riverine impounding (RI) wetland, located on the western edge of the SA, below an artificial pond and dam system on the neighboring property. This wetland extends outside of the SA to west and north in a larger wetland complex that includes palustrine emergent wetland in the deeper areas just offsite.

Plant community within the wetland is dominated by reed canary grass with red-osier dogwood (*Cornus stolonifera*) and Pacific ninebark along the transition from upland to the deeper emergent areas (Photo 5). Just upslope of the onsite wetland edge, black locust (*Robinia pseudoacacia*) dominates the canopy, bamboo (*Phyllostachys sp.)* and giant knotweed (*Polygonum sachalinense*) dominate the shrub stratum, and short-scale sedge (*Carex leptopoda)* and sharp-fruited rush (*Juncus acuminatus*) make up the herbaceous stratum (Photo 6).

Wetland data plot one (DP-1) soil met the Redox Dark Surface (F6) hydric soil indicator. The paired upland plot (DP-2) was dark brown in color (10YR 3/3 for 0-11 inches and 10YR 3/2 for 11-16 inch depth) throughout without redoximorphic features. Field verified soil characteristics at the site generally matched the NRCS mapped soil characteristics.

Hydrology at Wetland A is provided primarily by a culvert outflow from a neighboring pond system on private property to the south (Photo 7), as well as surface and subsurface flow from surrounding high areas towards the west. Water table was present at 12 inches depth at DP-1, meeting for High Water Table (A2) and Saturation (A3) hydrology indicators.

5.1.2 WETLAND B

Wetland B is a 0.133-acre palustrine forested broad-leaved deciduous artificially flooded (PFO1K), or riverine impounding, wetland located below an elevated berm of the pumpstation within a historic floodplain channel. A culvert located at the toe of the slope of the elevated berm conveys water from the pumpstation into this wetland for daily maintenance operations. Southern border of Wetland B is defined by compacted gravel and imported fill material. This wetland extends outside of the SA to the north (Photo 8).

Plant community within the wetland is dominated by red alder in the canopy stratum, and slough sedge (*Carex obnupta*) and grasses (*Poa sp.*) in the herbaceous stratum. Additionally, soft rush (*Juncus effusus*),

common spike rush (*Eleocharis palustris)*, and bird's-foot trefoil (*Lotus corniculatus)* were present throughout the herbaceous stratum. Just outside the onsite wetland edge, common self-heal (*Prunella vulgaris*) and *Poa sp.* grasses dominate the herbaceous stratum with an additional 20% coverage of Queen Anne's lace throughout.

Wetland data plot three (DP-3) soil met the Depleted Below Dark Surface (A11) hydric soil indicator. The paired upland plot (DP-4) was dark brown (10YR 3/2) throughout and included 50% angular gravel without redoximorphic features. A restrictive layer was met at 10 in. consisting of compacted angular gravel, likely originating from imported fill material used to construct the access road approximately 30 feet to the southwest.

Hydrology at Wetland B is provided primarily by an outflow pipe from the water intake pumphouse (Photo 9), as well as surface and subsurface flow and high groundwater from surrounding areas through sandy, well-draining soils. Saturation was present at surface of soil and through the top 10 in. of soil, meeting Saturation (A3) and FAC-Neutral Test (D5) hydrology indicators. Confirmation from onsite staff that the pumphouse outflow is operated for 10 to 15 minutes daily, year-round strongly indicates this is the primary source hydrology, but no estimate of flow rate or volume was provided.

5.1.3 WETLAND C

Wetland C is a 0.045-acre palustrine forested broad-leaved deciduous artificially flooded (PF01K), or riverine impounding, wetland located within a historic stream channel and floodplain, north of the maintained upland water intake infrastructure area. Wetland C also has an infrastructure related outfall that flows into the wetland for 10 to 15 minutes each day, with clear evidence of recent sediment deposits from the outfall (Photo 10). Slightly higher elevation topography in the middle of the wetland creates a small upland island that is defined by upland vegetation (Photo 11). This wetland extends outside of the study area to the north.

Plant community within the wetland is dominated by black cottonwood in the canopy stratum, Himalayan blackberry in the shrub stratum, and piggyback plant (*Tolmiea menziesii*) and western lady fern (*Athyrium cyclosorum*) in the herbaceous stratum. Additionally, reed canary grass and sweet coltsfoot (*Petasites frigidus*) were noted throughout. Just upslope of the onsite wetland edge, Oregon grape (*Mahonia aquifolium*), English holly, and trailing blackberry dominate the shrub stratum, while sword fern dominate the herbaceous layer with 50% cover.

Wetland data plot five (DP-5) soil met the Hydrogen Sulfide (A4) hydric soil indicator, as hydrogen sulfide odor was apparent immediately upon opening the plot. No redoximorphic features were present in the DP-5 soil profile down to 15 inches, but the corresponding upland plot had redox features beginning at 12 inches; combined with the clear H_2S odor, this indicates strongly that this area is permanently saturated.

Hydrology at Wetland C is provided primarily by an outflow pipe from the water intake infrastructure, as well as subsurface flow and high groundwater table within the historic channel and floodplain of the Molalla River, as Wetland C is below or similar in elevation to the OHWM. Water table was present at 6 inches at DP-5, with saturation of soil at the surface, meeting High Water Table (A2), Saturation (A3), and Hydrogen Sulfide Odor (C1) hydrology indicators.

5.2 NON-WETLAND WATERS DESCRIPTIONS

Approximately 591.83 linear feet of the Molalla River channel falls within the eastern portion of the SA. Only the western bank was accessed during the field investigation, which was sufficient to observe and record characteristic OHWL field indicators.

5.2.1 MOLALLA RIVER

The Molalla River is a perennial stream that flows into the Willamette River and is the largest free-flowing tributary of the Willamette River. The channel portion within the SA is a slight bend in the river, with an in-channel vegetated island present south of the SA. The southern end of the SA has an approximately 50-foot-wide channel between the in-channel island and a steep (>20% slope) bank. The northern end of the SA has an approximately 155-foot-wide channel and floodplain.

The OHWL corresponds to an approximate elevation of between approximately 391 feet (northern end of SA) to 398 feet (southern end of SA), and the primary OHWL field indicators observed were change in vegetation from no vegetation to riparian, change of large cobbles (>6”) to sandy/rocky soils, and presence of litter and debris (Table 4). A large pile of cobbles at a depression in the channel is above the OHWL and is placed dredged material from operations related to placing the water intake infrastructure (Photo 12).

Table 4. Ordinary High Water Line Field Indicators Observed

[1]OAR 141-085-0515 (3) OHWL Field Indicators	Observed	Notes
(a) Clear, natural line impressed on the shore;	No	Dense vegetation in areas along with large cobbles prevented observation of lower bank soils
(b) Change in vegetation from riparian (e.g., willows) to upland (e.g., oak, fir) dominated;	Yes	Little/no vegetation to riparian and upland vegetation
(c) Textural change of depositional sediment or changes in the character of the soil (e.g., from sand, sand and cobble, cobble and gravel to upland soils);	Yes	Large cobbles and river rock (>6”) changed to rocky/sandy upland soils
(d) Elevation below which no fine debris (needles, leaves, cones, and seeds) occurs;	Yes	Large cobbles and river rock clear of fine debris changes to riparian vegetation with fine debris caught
(e) Presence of litter and debris, water-stained leaves, water lines on tree trunks;	Yes	Larger debris present and visible along portion of channel (Photo 13)
(f) Other appropriate means that consider the characteristics of the surrounding areas.	Yes	Armoring of banks at the southern end of SA indicate water level regularly reaches

		these areas and protection is required

[1.] Field indicators consistent with *National Ordinary High Water Mark Field Delineation Manual for Rivers and Streams* November 2022 Interim Version Guidance (USACE, 2022)

6.0 DEVIATION FROM LWI OR NWI

There is no local wetland inventory for the project area (DSL 2024). The NWI maps the Molalla River as a permanently flooded, upper perennial, unconsolidated bottom riverine (R3UBH) feature. It maps a R3UBH side channel through the SA (Figure 4), however field observation showed that this NWI mapped feature likely corresponds to a historic floodplain side channel which has been disconnected from surface flows from the main channel of the Molalla River since the early 1950's, except in the largest flow events.

Wetlands A, B, and C are a deviation from the NWI, though all three wetlands onsite fall within the historic floodplain. The current alignment of the Molalla River deviates from the NWI, specifically the R3UBH side channel cutting through the SA, however, the approximate area and length of the stream main channel within or nearby to the SA align with the NWI mapping.

7.0 MAPPING METHOD

The field team GPS-located data plot locations and wetland boundaries in the field during the delineation. Data plot locations and wetland boundaries were mapped in the field with a resource grade Arrow 100® submeter global navigation satellite system receiver paired with an iPad running ESRI Field Maps. These data (shapefiles) were then used to produce applicable maps described in the DSL guidance.

8.0 ADDITIONAL INFORMATION

8.1 FISH PRESENCE

Based on Oregon Department of State Lands 2023 Essential Salmonid Habitat Map and National Marine Fisheries Service Critical Habitat mapping, fish species of concern with known or potential presence in the Molalla River include Upper Willamette River winter and summer steelhead (*Oncorhynchus mykiss*; ESA-listed, threatened), Upper Willamette River Spring Chinook (*O. tshawytscha;* ESA-listed, threatened*)*; and cutthroat trout (*O. clarkii;* native migratory species).

8.2 BATHYMETRIC SURVEY

A water intake was originally installed in 1992, but due to extensive damage during a flood in February of 1996 it was replaced with a different intake later in 1996 (City of Molalla, 2021). The 1992 intake pipe and bar-screen were removed, but the excavated area where the intake was located remains as a significant depression in the channel, with a rock weir about 75 feet downstream that controls the water surface elevation in the depression The 1996 intake is located approximately 130 feet to the northeast and downstream of the 1992 intake (Diagram 1).

A bathymetric survey was conducted as part of this project to characterize the Molalla River channel surrounding the area of interest for a new intake (PACE, 2024). Important features characterized by the bathymetric survey include: the original depression of the 1992 intake, the depression housing the existing intake structure, and the extents of an in-channel gravel bar between RM 22.7 and RM 22.5 on the Molalla River. The survey was supplemented by available Light Detection and Ranging (LiDAR) data to characterize the floodplain topography (DOGAMI, 2009).

8.3 USGS GAGE DATA

Additionally, flows from the USGS Molalla River near Canby gage (USGS 14200000) were investigated to determine the relative flow rates during the field investigation as compared to the typically largest flows in any year. During the field investigation date of November 7th, the gage near Canby recorded a stage height on the Molalla River between 11.61 to 11.45 feet, while peak annual stage heights expected are between 16 and 18 feet (USGS 2024). Though the gage is 16 miles downstream of the SA and many additional hydrologic inputs are expected to impact the Molalla River flows between the SA and gage, it is assumed that flows at the SA would increase at a similar rate to increases at the gage due to similar land use and contributing basin characteristics. For this reason, topography was considered more strongly when delineating the OHWL, as high flows for the season had likely not begun at the time of the field visit and some indicators may have faded or changed over the course of the lower-flow season ending in October.

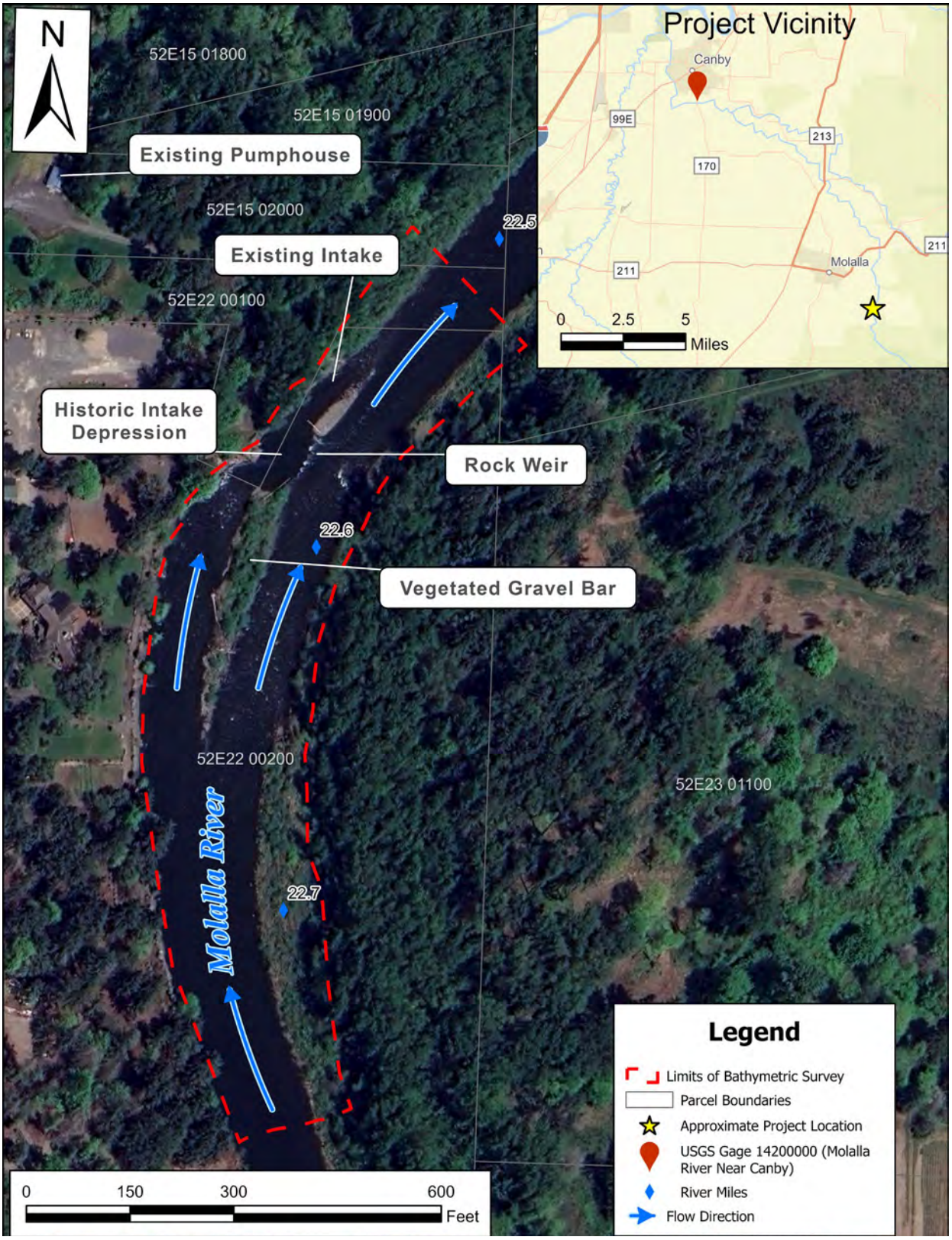


Diagram 1: Showing Extents of Bathymetric Survey

9.0 RESULTS AND CONCLUSIONS

Two palustrine forested wetlands and one palustrine scrub-shrub wetland were delineated in the SA. Wetland A exhibited a dominance of hydrophytic vegetation, the hydric soil indicator *Redox Dark Surface (F6),* and wetland hydrology indicators *High Water Table (A2)* and *Saturation (A3)* while the upland areas lacked one or more of these requirements. Wetland B exhibited a dominance of hydrophytic vegetation, the hydric soil indicator *Depleted Below Dark Surface (A11)*, and wetland hydrology indicators *Saturation (A3)* and *FAC-Neutral Test (D5)* while the upland areas lacked one or more of these requirements. Wetland C exhibited a dominance of hydrophytic vegetation, the hydric soil indicator *Hydrogen Sulfide (A4)*, and wetland indicators *High Water Table (A2), Saturation (A3),* and *Hydrogen Sulfide Odor (C1)* while the upland areas lacked one or more of these requirements.

The OHWM of the Molalla River was delineated based on field indicators including change in vegetation, presence of litter and debris, and bank scouring/topography.

Table 5. Summary of wetlands in the SA

Wetland	Cowardin Class	HGM Class	Area (Acres)
A	PSS6	Riverine Impounding	0.005
B	PFO1	Riverine Impounding	0.133
C	PF01	Riverine Impounding	0.045
		Total	**0.183**

Cowardin Modifiers: P – Palustrine; FO1 – Forested, Broad Leaved Deciduous; SS6 – Scrub-Shrub, Deciduous

Table 6. Summary of non-wetland waters in the SA

Feature	Cowardin Class	HGM Class	Length (LF)
Molalla River	R2UBH	Riverine	591.83
		Total	**591.83**

Cowardin Modifiers: R2 – Riverine Lower Perennial; UB – Unconsolidated Bottom; H – Permanently Flooded

*Waters area for the Molalla River was digitized using LiDAR (DOGAMI), aerial imagery, and the approximate average width of the OHWL physical and biological indicators as observed from the west bank only

Since wetlands and waters were delineated in the SA, an ORWAP analysis of the functions and values of wetlands, and a SFAM analysis of stream functions and values were performed. ORWAP and SFAM results can be provided electronically upon request. Though the Molalla River channel was only partially-wadeable at the time of the field visit, the SFAM analysis was conducted partially through use of the ten surveyed cross sections, ostensibly more accurate than field staff measurements. However, since this varies from the accepted approach, functions and values predicted for the Molalla River in this reach may be skewed if its characteristics are outside of the standard indices or scales used to create the SFAM tool.

10.0 DISCLAIMER

Required Disclaimer

"This report documents the investigation, best professional judgment and conclusions of the investigator. It is correct and complete to the best of my knowledge. It should be considered a Preliminary Jurisdictional Determination of wetlands and other waters and used at your own risk unless it has been reviewed and approved in writing by the Oregon Department of State Lands in accordance with OAR 141-090-0005 through 141-090-0055."

Tetra Tech Disclaimer

This report has been prepared for use by the City of Molalla and their designees. The results and conclusions presented above represent strict adherence to USACE wetland delineation methodology and the best professional judgement of Tetra Tech. Any modifications to this report shall only be performed by its author. The Tetra Tech biologists did not thoroughly investigate or define any wetland conditions beyond the PSA. Therefore, this report makes no conclusions about conditions found beyond PSA boundary.

APPENDIX A. FIGURES

Figure 1. Project Location and Vicinity

1 Study Area

0 1,000 2,000 3,000 ft

SCALE: 1 IN = 1,500 FT

N

TETRA TECH

213

Coordinate System: NAD 1983 HARN StatePlane Oregon North FIPS 3601 (Intl Feet) Sources: Tetra Tech 2024, ESRI 2024

Figure 2. Tax Lot Map

Tax Lots
Study Area

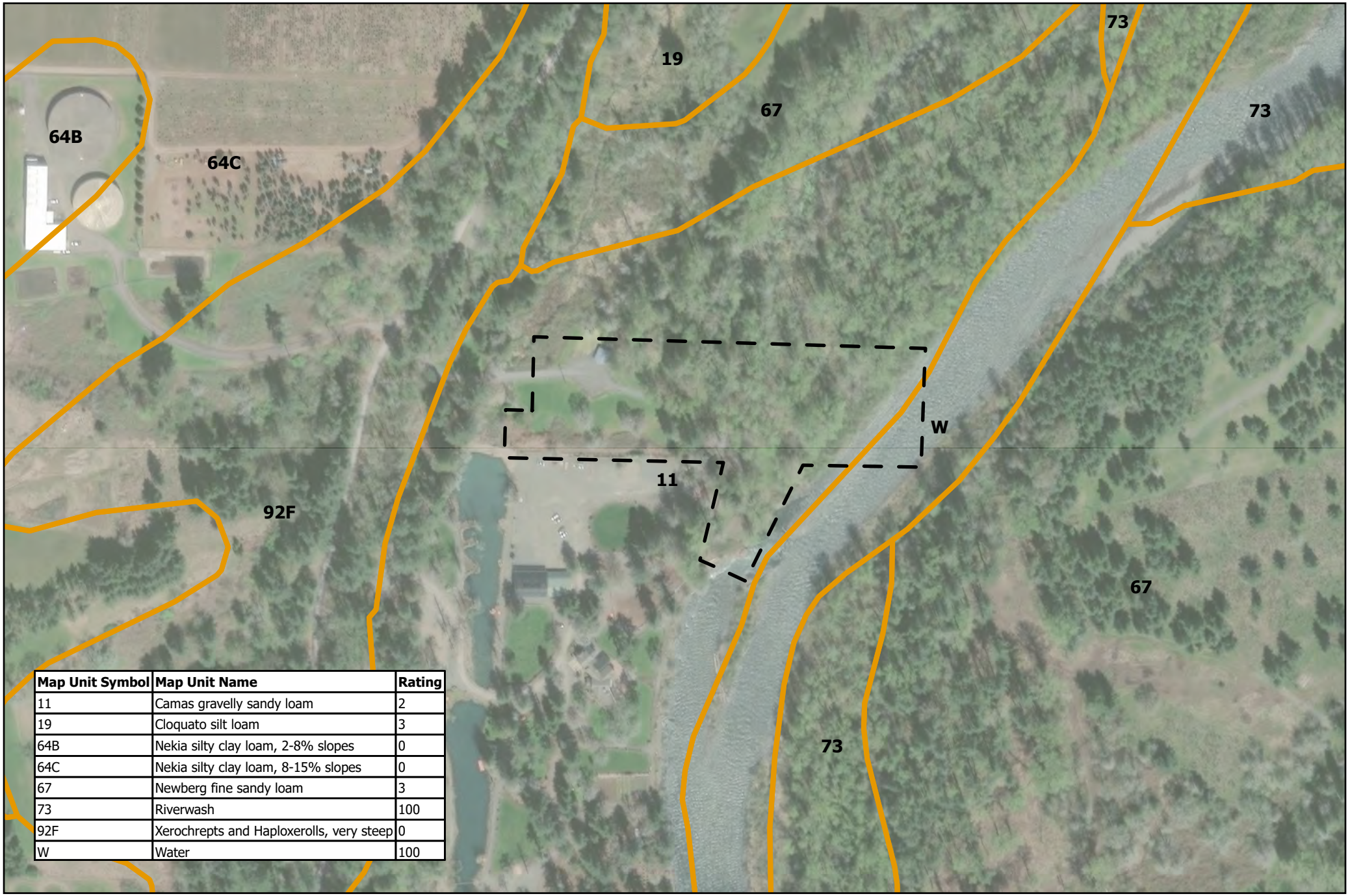
0 60 120 180 ft

SCALE: 1 IN = 125 FT

N

TETRA TECH

Coordinate System: NAD 1983 HARN StatePlane Oregon North FIPS 3601 (Intl Feet) Sources: Tetra Tech 2024, Clackamas County 2024, ESRI 2024



Map Unit Symbol	Map Unit Name	Rating
11	Camas gravelly sandy loam	2
19	Cloquato silt loam	3
64B	Nekia silty clay loam, 2-8% slopes	0
64C	Nekia silty clay loam, 8-15% slopes	0
67	Newberg fine sandy loam	3
73	Riverwash	100
92F	Xerochrepts and Haploxerolls, very steep	0
W	Water	100

Figure 3. NRCS Soil Survey Map

NRCS Mapped Soils
Study Area

0 125 250 375 ft

SCALE: 1 IN = 250 FT

N

TETRA TECH

215

Coordinate System: NAD 1983 HARN StatePlane Oregon North FIPS 3601 (Intl Feet) Sources: Tetra Tech 2024, USDA NRCS 2024, ESRI 2024

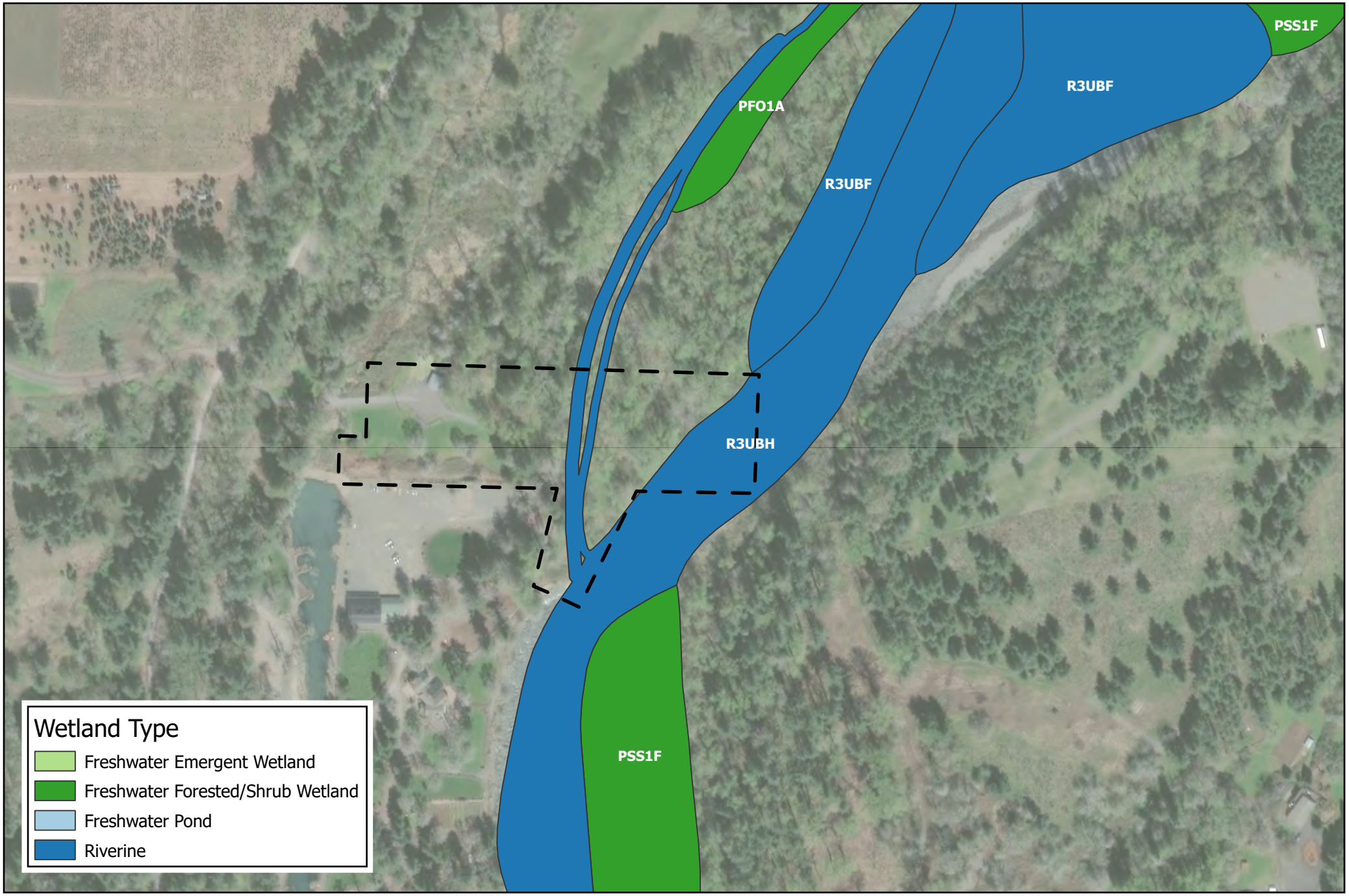


Figure 4. National Wetlands Inventory Map

Study Area

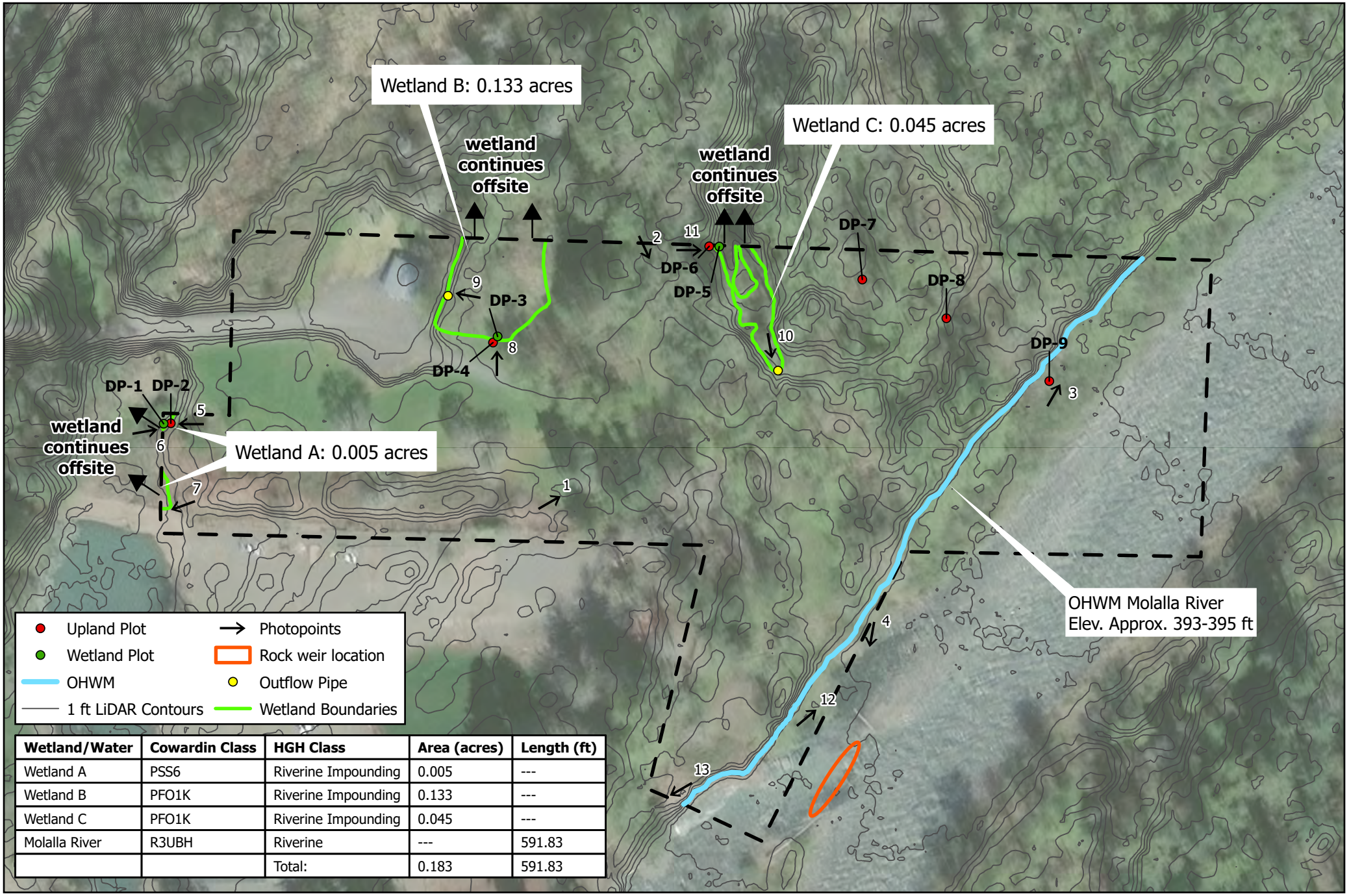
0 150 300 450 ft

SCALE: 1 IN = 250 FT

N

TETRA TECH

Coordinate System: NAD 1983 HARN StatePlane Oregon North FIPS 3601 (Intl Feet) Sources: Tetra Tech 2024, USFWS NWI 2024, ESRI 2024



Wetland/Water	Cowardin Class	HGH Class	Area (acres)	Length (ft)
Wetland A	PSS6	Riverine Impounding	0.005	---
Wetland B	PFO1K	Riverine Impounding	0.133	---
Wetland C	PFO1K	Riverine Impounding	0.045	---
Molalla River	R3UBH	Riverine	---	591.83
		Total:	0.183	591.83

Figure 5. Wetland Map

Study Area

0 50 100 150 ft

SCALE: 1 IN = 100 FT

N

TETRA TECH

Coordinate System: NAD 1983 HARN StatePlane Oregon North FIPS 3601 (Intl Feet) Vertical Datum: NAVD88 Sources: Tetra Tech 2024, DOGAMI 2009, ESRI 2024

APPENDIX B. DATA FORMS

U.S. Army Corps of Engineers

WETLAND DETERMINATION DATA SHEET – Western Mountains, Valleys, and Coast Region

See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Molalla Intake | City/County: Unincorporated Clackamas County | Sampling Date: 11/7/2024

Applicant/Owner: City of Molalla / City of Molalla | State: OR | Sampling Point: DP 1

Investigator(s): C. Ralls, K. Sanderford | Section, Township, Range: S22 T5S R2E

Landform (hillside, terrace, etc.): floodplain | Local relief (concave, convex, none): concave | Slope (%): 5

Subregion (LRR): LRR A, MLRA 2 | Lat: 45.1287489 | Long: -122.5418542 | Datum: NAD83

Soil Map Unit Name: Camas gravelly sandy loam | NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
From WETS station SILVERTON, OR (nearest station with sufficient data): September precipitation is below normal range, October is above normal range. Previous 2 weeks before field date (10/23-11/6) , accumulation is 3.28" and normal is 2.74" (above normal).

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 30)			
1. *Phyllostachys spp.*	35	Yes	UPL
2.			
3.			
4.			
5.			
	35 =Total Cover		
Herb Stratum (Plot size: 15)			
1. *Phalaris arundinacea*	90	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	90 =Total Cover		
Woody Vine Stratum (Plot size: 15)			
1.			
2.			
	=Total Cover		

% Bare Ground in Herb Stratum ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	90	x 2 =	180
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	35	x 5 =	175
Column Totals:	125 (A)		355 (B)
Prevalence Index = B/A =			2.84

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation

____ 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

____ 5 - Wetland Non-Vascular Plants[1]

____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks:

SOIL

Sampling Point: DP 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/3	100			C		Loamy/Clayey	Silt clay
6-10	10YR 3/2	95	7.5YR 4/6	5	C	PL	Loamy/Clayey	Prominent redox concentrations
10-16	10YR 3/1	95	7.5YR 4/6	5	C	PL	Sandy	Prominent redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ 1 cm Muck (A9) **(LRR D, G)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR A, E)**
- ___ Iron-Manganese Masses (F12) **(LRR D)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ___	No x	Depth (inches): ___
Water Table Present?	Yes X	No ___	Depth (inches): 12
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 0

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

U.S. Army Corps of Engineers

WETLAND DETERMINATION DATA SHEET – Western Mountains, Valleys, and Coast Region

See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Molalla Intake | City/County: Unincorporated Clackamas County | Sampling Date: 11/7/2024

Applicant/Owner: City of Molalla / City of Molalla | State: OR | Sampling Point: DP-2

Investigator(s): C. Ralls, K. Sanderford | Section, Township, Range: S22 T5S R2E

Landform (hillside, terrace, etc.): floodplain | Local relief (concave, convex, none): concave | Slope (%): 5

Subregion (LRR): LRR A, MLRA 2 | Lat: 45.1287503 | Long: -122.5418321 | Datum: NAD83

Soil Map Unit Name: Camas gravelly sandy loam | NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:
From WETS station SILVERTON, OR (nearest station with sufficient data): September precipitation is below normal range, October is above normal range. Previous 2 weeks before field date (10/23-11/6) , accumulation is 3.28" and normal is 2.74" (above normal).

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Robinia pseudoacacia	40	Yes	FACU
2.			
3.			
4.			
	40	=Total Cover	
Sapling/Shrub Stratum (Plot size: 30)			
1. *Phyllostachys sp.*	50	Yes	UPL
2. *Polygonum sachalinense*	15	Yes	FACU
3.			
4.			
5.			
	65	=Total Cover	
Herb Stratum (Plot size: 15)			
1. *Carex leptopoda*	15	Yes	FAC
2. *Juncus acuminatus*	1	No	OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	16	=Total Cover	
Woody Vine Stratum (Plot size: 15)			
1.			
2.			
		=Total Cover	

% Bare Ground in Herb Stratum ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 25.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- ____ 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ 5 - Wetland Non-Vascular Plants[1]
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ____ **No** X

Remarks:

SOIL

Sampling Point: DP-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-11	10YR 3/3	100					Loamy/Clayey	Silt Clay
11-16	10YR 3/2	100					Loamy/Clayey	Loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ 1 cm Muck (A9) **(LRR D, G)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR A, E)**
- ___ Iron-Manganese Masses (F12) **(LRR D)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes X No ___ Depth (inches): 15

Saturation Present? Yes X No ___ Depth (inches): 13

(includes capillary fringe)

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

U.S. Army Corps of Engineers

WETLAND DETERMINATION DATA SHEET – Western Mountains, Valleys, and Coast Region

See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Molalla Intake | City/County: Unincorporated Clackamas County | Sampling Date: 11/7/2024

Applicant/Owner: City of Molalla / City of Molalla | State: OR | Sampling Point: DP-3

Investigator(s): C. Ralls, K. Sanderford | Section, Township, Range: S15 T5S R2E

Landform (hillside, terrace, etc.): floodplain | Local relief (concave, convex, none): concave | Slope (%): 1

Subregion (LRR): LRR A, MLRA 2 | Lat: 45.1289594 | Long: -122.5408237 | Datum: NAD83

Soil Map Unit Name: Camas gravelly sandy loam | NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
From WETS station SILVERTON, OR (nearest station with sufficient data): September precipitation is below normal range, October is above normal range. Previous 2 weeks before field date (10/23-11/6) , accumulation is 3.28" and normal is 2.74" (above normal).

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Alnus rubra*	10	Yes	FAC
2.			
3.			
4.			
	10	=Total Cover	
Sapling/Shrub Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
5.			
		=Total Cover	
Herb Stratum (Plot size: 15)			
1. *Carex obnupta*	50	Yes	OBL
2. *Poa sp*	30	Yes	FAC
3. *Prunella vulgaris*	5	No	FACU
4. *Lotus corniculatus*	5	No	FAC
5. *Juncus effusus*	5	No	FACW
6. *Eleocharis ovata*	1	No	OBL
7.			
8.			
9.			
10.			
11.			
	96	=Total Cover	
Woody Vine Stratum (Plot size: 15)			
1.			
2.			
		=Total Cover	

% Bare Ground in Herb Stratum ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ 5 - Wetland Non-Vascular Plants[1]
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks:

SOIL

Sampling Point: DP-3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/2	99	7.5YR 3/4	1	C	PL	Loamy/Clayey	Silty Clay
6-10	10YR 4/2	95	7.5YR 3/4	5	C	PL	Loamy/Clayey	25% angular gravel/fill

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ 1 cm Muck (A9) **(LRR D, G)**
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR A, E)**
- ___ Iron-Manganese Masses (F12) **(LRR D)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Gravel/fill

Depth (inches): 10

Hydric Soil Present? **Yes** X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 0

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Soil saturated in top 10", indicating at least seasonally primary source hydrology is from artificial inputs and not high ground water

U.S. Army Corps of Engineers

WETLAND DETERMINATION DATA SHEET – Western Mountains, Valleys, and Coast Region

See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Molalla Intake | City/County: Unincorporated Clackamas County | Sampling Date: 11/7/2024

Applicant/Owner: City of Molalla / City of Molalla | State: OR | Sampling Point: DP-4

Investigator(s): C. Ralls, K. Sanderford | Section, Township, Range: S15 T5S R2E

Landform (hillside, terrace, etc.): floodplain | Local relief (concave, convex, none): concave | Slope (%): 1

Subregion (LRR): LRR A, MLRA 2 | Lat: 45.1289457 | Long: -122.5408375 | Datum: NAD83

Soil Map Unit Name: Camas gravelly sandy loam | NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:
From WETS station SILVERTON, OR (nearest station with sufficient data): September precipitation is below normal range, October is above normal range. Previous 2 weeks before field date (10/23-11/6) , accumulation is 3.28" and normal is 2.74" (above normal).

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Herb Stratum (Plot size: 15)			
1. *Poa sp.*	25	Yes	FAC
2. *Agrostis stolonifera*	5	No	FAC
3. *Prunella vulgaris*	50	Yes	FACU
4. *Daucus carota*	20	No	FACU
5. *Holcus lanatus*	1	No	FAC
6. *Trifolium arvense*	1	No	UPL
7.			
8.			
9.			
10.			
11.			
	102	=Total Cover	
Woody Vine Stratum (Plot size: 15)			
1.			
2.			
	=Total Cover		

% Bare Ground in Herb Stratum ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation

____ 2 - Dominance Test is >50%

____ 3 - Prevalence Index is ≤3.0[1]

____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

____ 5 - Wetland Non-Vascular Plants[1]

____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ____ **No** X

Remarks:

SOIL

Sampling Point: DP-4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 3/2	100					Loamy/Clayey	50% angular gravel

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ 1 cm Muck (A9) **(LRR D, G)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR A, E)**
- ___ Iron-Manganese Masses (F12) **(LRR D)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Angular gravel

Depth (inches): 10

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No shallow aquitard, restrictive layer would be permeable to flow

U.S. Army Corps of Engineers

WETLAND DETERMINATION DATA SHEET – Western Mountains, Valleys, and Coast Region

See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Molalla Intake | City/County: Unincorporated Clackamas County | Sampling Date: 11/7/2024

Applicant/Owner: City of Molalla / City of Molalla | State: OR | Sampling Point: DP-5

Investigator(s): C. Ralls, K. Sanderford | Section, Township, Range: S15 T5S R2E

Landform (hillside, terrace, etc.): floodplain | Local relief (concave, convex, none): concave | Slope (%): 10

Subregion (LRR): LRR A, MLRA 2 | Lat: 45.1291694 | Long: -122.5401421 | Datum: NAD83

Soil Map Unit Name: Camas gravelly sandy loam | NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
From WETS station SILVERTON, OR (nearest station with sufficient data): September precipitation is below normal range, October is above normal range. Previous 2 weeks before field date (10/23-11/6) , accumulation is 3.28" and normal is 2.74" (above normal).

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus trichocarpa*	60	Yes	FAC
2. *Acer macrophyllum*	10	No	FACU
3. *Thuja plicata*	15	No	FAC
4.			
	85	=Total Cover	
Sapling/Shrub Stratum (Plot size: 30)			
1. *Frangula purshiana*	5	No	FAC
2. *Mahonia aquifolium*	15	Yes	FACU
3. *Rubus armeniacus*	15	Yes	FAC
4. *Acer macrophyllum*	5	No	FACU
5.			
	40	=Total Cover	
Herb Stratum (Plot size: 15)			
1. *Athyrium cyclosorum*	40	Yes	FAC
2. *Tolmiea menziesii*	20	Yes	FAC
3. *Phalaris arundinacea*	5	No	FACW
4. *Petasites frigidus*	5	No	FACW
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	70	=Total Cover	
Woody Vine Stratum (Plot size: 15)			
1.			
2.			
		=Total Cover	

% Bare Ground in Herb Stratum ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 80.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ 5 - Wetland Non-Vascular Plants[1]
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks:

SOIL

Sampling Point: DP-5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-9	7.5YR 3/2	99	7.5YR 4/4	1	C	PL	Loamy/Clayey	
9-15	10YR 4/2						Sandy	H2S odor, no redox

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- X Hydrogen Sulfide (A4)
- ___ 1 cm Muck (A9) **(LRR D, G)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR A, E)**
- ___ Iron-Manganese Masses (F12) **(LRR D)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

This area stays artificially saturated perennially due to regular pump system maintenance at the water treatment plant. Redox concentrations haven't formed in the soil below 9" likely due to lack of wetting/drying cycle and H2S odor is apparent immediately upon opening plot.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- X Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes X	No ___	Depth (inches): 6
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 0

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

U.S. Army Corps of Engineers

WETLAND DETERMINATION DATA SHEET – Western Mountains, Valleys, and Coast Region

See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Molalla Intake | City/County: Unincorporated Clackamas County | Sampling Date: 11/7/2024

Applicant/Owner: City of Molalla / City of Molalla | State: OR | Sampling Point: DP-6

Investigator(s): C. Ralls, K. Sanderford | Section, Township, Range: S15 T5S R2E

Landform (hillside, terrace, etc.): floodplain | Local relief (concave, convex, none): concave | Slope (%): 10

Subregion (LRR): LRR A, MLRA 2 | Lat: 45.1291694 | Long: -122.5401735 | Datum: NAD83

Soil Map Unit Name: Camas gravelly sandy loam | NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:
From WETS station SILVERTON, OR (nearest station with sufficient data): September precipitation is below normal range, October is above normal range. Previous 2 weeks before field date (10/23-11/6) , accumulation is 3.28" and normal is 2.74" (above normal).

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Thuja plicata*	25	Yes	FAC
2. *Populus trichocarpa*	50	Yes	FAC
3.			
4.			
	75	=Total Cover	
Sapling/Shrub Stratum (Plot size: 30)			
1. *Mahonia aquifolium*	10	Yes	FACU
2. *Ilex aquifolium*	10	Yes	FACU
3. *Sambucus racemosa*	5	No	FACU
4. *Symphoricarpos albus*	5	No	FACU
5. *Rubus ursinus*	10	Yes	FACU
	40	=Total Cover	
Herb Stratum (Plot size: 15)			
1. *Petasites frigidus*	20	Yes	FACW
2. *Polystichum munitum*	50	Yes	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	70	=Total Cover	
Woody Vine Stratum (Plot size: 15)			
1.			
2.			
		=Total Cover	

% Bare Ground in Herb Stratum ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 42.9% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation

____ 2 - Dominance Test is >50%

____ 3 - Prevalence Index is ≤3.0[1]

____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

____ 5 - Wetland Non-Vascular Plants[1]

____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks:

SOIL

Sampling Point: DP-6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 3/2						Loamy/Clayey	Silty Clay
12-15	10YR 4/2	95	7.5YR 3/4	5	C	PL	Loamy/Clayey	Distinct redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ 1 cm Muck (A9) **(LRR D, G)**
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR A, E)**
- ___ Iron-Manganese Masses (F12) **(LRR D)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** X

Remarks:

Because of the artificial but consistent hydrology inputs from the drinking water facility into this wetland, this upland edge likely experiences wetting/drying frequently throughout the year and so has hydric soils.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Elevationally this plot is about 2-feet above DP-5

VEGETATION Continued – Use scientific names of plants. Sampling Point: DP-6

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	75	=Total Cover	
Sapling/Shrub Stratum			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
	40	=Total Cover	
Herb Stratum			
12.			
13.			
14.			
15.			
16.			
17.			
18.			
19.			
20.			
21.			
22.			
23.			
	70	=Total Cover	
Woody Vine Stratum			
3.			
4.			
5.			
6.			
7.			
		=Total Cover	

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants less than 3 in. DBH, regardless of height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size.

Woody Vine – All woody vines, regardless of height.

Remarks:

U.S. Army Corps of Engineers

WETLAND DETERMINATION DATA SHEET – Western Mountains, Valleys, and Coast Region

See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Molalla Intake | City/County: Unincorporated Clackamas County | Sampling Date: 11/7/2024

Applicant/Owner: City of Molalla / City of Molalla | State: OR | Sampling Point: DP-7

Investigator(s): C. Ralls, K. Sanderford | Section, Township, Range: S15 T5S R2E

Landform (hillside, terrace, etc.): floodplain | Local relief (concave, convex, none): concave | Slope (%): 5

Subregion (LRR): LRR A, MLRA 2 | Lat: 45.1291048 | Long: -122.539653 | Datum: NAD83

Soil Map Unit Name: Camas gravelly sandy loam | NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:
From WETS station SILVERTON, OR (nearest station with sufficient data): September precipitation is below normal range, October is above normal range. Previous 2 weeks before field date (10/23-11/6) , accumulation is 3.28" and normal is 2.74" (above normal).

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus trichocarpa*	40	Yes	FAC
2. *Acer macrophyllum*	10	Yes	FACU
3.			
4.			
	50	=Total Cover	
Sapling/Shrub Stratum (Plot size: 30)			
1. *Rubus armeniacus*	30	Yes	FAC
2. *Corylus cornuta*	5	No	FACU
3.			
4.			
5.			
	35	=Total Cover	
Herb Stratum (Plot size: 15)			
1. *Equisetum hyemale*	20	Yes	FACW
2. *Phalaris arundinacea*	15	Yes	FACW
3. *Polystichum munitum*	5	No	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	40	=Total Cover	
Woody Vine Stratum (Plot size: 15)			
1.			
2.			
		=Total Cover	

% Bare Ground in Herb Stratum ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 80.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ 5 - Wetland Non-Vascular Plants[1]
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:
Sampled this area due to ~100 square foot patch of reed canary grass in low-lying area

SOIL

Sampling Point: DP-7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-13	10YR 3/3	100					Sandy	Cobbles, sandy clay

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ 1 cm Muck (A9) **(LRR D, G)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR A, E)**
- ___ Iron-Manganese Masses (F12) **(LRR D)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

U.S. Army Corps of Engineers

WETLAND DETERMINATION DATA SHEET – Western Mountains, Valleys, and Coast Region

See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Molalla Intake | City/County: Unincorporated Clackamas County | Sampling Date: 11/7/2024

Applicant/Owner: City of Molalla / City of Molalla | State: OR | Sampling Point: DP-8

Investigator(s): C. Ralls, K. Sanderford | Section, Township, Range: Rubus ursinus

Landform (hillside, terrace, etc.): floodplain | Local relief (concave, convex, none): concave | Slope (%): 5

Subregion (LRR): LRR A, MLRA 2 | Lat: 45.1290244 | Long: -122.539431 | Datum: NAD83

Soil Map Unit Name: Camas gravelly sandy loam | NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:
From WETS station SILVERTON, OR (nearest station with sufficient data): September precipitation is below normal range, October is above normal range. Previous 2 weeks before field date (10/23-11/6) , accumulation is 3.28" and normal is 2.74" (above normal).

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus trichocarpa*	20	Yes	FAC
2. *Alnus rubra*	10	Yes	FAC
3.			
4.			
	30	=Total Cover	
Sapling/Shrub Stratum (Plot size: 30)			
1. *Rubus armeniacus*	30	Yes	FAC
2. *Physocarpus capitatus*	10	Yes	FACW
3. *Corylus cornuta*	10	Yes	FACU
4.			
5.			
	50	=Total Cover	
Herb Stratum (Plot size: 15)			
1. *Rubus ursinus*	10	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	10	=Total Cover	
Woody Vine Stratum (Plot size: 15)			
1.			
2.			
		=Total Cover	

% Bare Ground in Herb Stratum ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ 5 - Wetland Non-Vascular Plants[1]
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:
Mixed riparian plant community in a low-lying area suspected to be a historic side channel within a floodplain that has been cut off from surface flows from the channel in this area.

SOIL

Sampling Point: DP-8

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-14	10YR 3/3	100					Sandy	Silty sand

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ 1 cm Muck (A9) **(LRR D, G)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR A, E)**
- ___ Iron-Manganese Masses (F12) **(LRR D)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

U.S. Army Corps of Engineers

WETLAND DETERMINATION DATA SHEET – Western Mountains, Valleys, and Coast Region

See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Molalla Intake | City/County: Unincorporated Clackamas County | Sampling Date: 11/7/2024

Applicant/Owner: City of Molalla / City of Molalla | State: OR | Sampling Point: DP-9

Investigator(s): C. Ralls, K. Sanderford | Section, Township, Range: S15 T5S R2E

Landform (hillside, terrace, etc.): floodplain | Local relief (concave, convex, none): concave | Slope (%): 1

Subregion (LRR): LRR A, MLRA 2 | Lat: 45.1288912 | Long: -122.5391069 | Datum: NAD83

Soil Map Unit Name: Camas gravelly sandy loam | NWI classification: R3UBH

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:
From WETS station SILVERTON, OR (nearest station with sufficient data): September precipitation is below normal range, October is above normal range. Previous 2 weeks before field date (10/23-11/6) , accumulation is 3.28" and normal is 2.74" (above normal).

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix sitchensis	60	Yes	FACW
2. *Alnus rubra*	20	Yes	FAC
3.			
4.			
	80	=Total Cover	
Sapling/Shrub Stratum (Plot size: 30)			
1. *Rubus spectabilis*	5	Yes	FAC
2. *Fraxinus latifolia*	5	Yes	FACW
3. *Rubus armeniacus*	10	Yes	FAC
4.			
5.			
	20	=Total Cover	
Herb Stratum (Plot size: 15)			
1. *Agrostis stolonifera*	20	Yes	FAC
2. *Geranium robertianum*	5	No	FACU
3. *Carex leptopoda*	10	Yes	FAC
4. *Elymus glaucus*	5	No	FACU
5. *Solanum dulcamara*	5	No	FAC
6.			
7.			
8.			
9.			
10.			
11.			
	45	=Total Cover	
Woody Vine Stratum (Plot size: 15)			
1.			
2.			
		=Total Cover	

% Bare Ground in Herb Stratum ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

____ 3 - Prevalence Index is ≤3.0[1]

____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

____ 5 - Wetland Non-Vascular Plants[1]

____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL

Sampling Point: DP-9

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-14	10YR 3/3						Sandy	Silty sand

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ 1 cm Muck (A9) **(LRR D, G)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR A, E)**
- ___ Iron-Manganese Masses (F12) **(LRR D)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
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- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

APPENDIX C. GROUND LEVEL COLOR PHOTOGRAPHS

Photo 1. Looking northeast showing maintained upland water intake infrastructure area

Photo 2. Looking southeast showing upland habitat between Wetlands B and C

Photo 3. Looking northwest along the riparian area adjacent to the Molalla River

Photo 4. Looking south at in-channel island (center) and existing maintained rock weir (left) within the Molalla River.

Photo 5. Looking west from above Wetland A showing typical conditions with reed canary grass dominance within the wetland. Shovel at DP-1.

Photo 6. Looking east within Wetland A, showing upland vegetation above Wetland A. Shovel at DP-1.

Photo 7. Looking southwest at the culvert below SA that provides hydrology for Wetland A.

Photo 8. Looking north at southern boundary of Wetland B. Shovel is at DP-6.

Photo 9. Looking east at edge of Wetland B, showing hydrology source of outflow pipe (red circle) from water intake pumphouse.

Photo 10. Looking south at boundary of Wetland C, where the outflow pipe (red circle) of water intake infrastructure flushes water daily.

Photo 11. Looking east at western boundary of Wetland C, showing upland island present (red circle) in Wetland C and standing water (left) of Wetland C. Shovel is at DP-6.

Photo 12. Looking northeast above and at OHWM along southeastern edge of SA along the Molalla River.

Photo 13. Looking southwest, larger debris above OHWM along reenforced banks of Molalla River

APPENDIX D. LITERATURE CITATIONS

Adamus, P.R. 2001. Guidebook for Hydrogeomorphic (HGM) Based Assessment of Oregon Wetlands and Riparian Sites: Statewide Classification and Profiles. Oregon Division of State Lands, Salem, OR.

Agricultural Applied Climate Information System (AgACIS). 2023. National Oceanic and Atmospheric Administration's National Weather Service. Daily precipitation data and WETS data from McMinnville Municipal Airport (AP), OR. Available at: http://agacis.rcc-acis.org/?fips=41071. Last accessed November 2024.

City of Molalla. (2021, May). *Water Management, Conservation, and Water System Master Plan.* Retrieved from www.cityofmolalla.com/sites/default/files/fileattachments/public_works/page/1761/wmcwsmp_adopted_20210526_ord_2021-08.pdf

Cowardin, L. M., V. Carter, F. C. Golet, E. T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. U.S. Department of the Interior, Fish and Wildlife Service, Washington, D.C. 131pp.

DOGAMI. (2009). *LiDAR Remote Sensing Data Collection, Department of Geology and Mineral Industries, Willamette Valley Phase 1 Study Area.* Portland, Oregon: Prepared by Watershed Sciences, Inc.

DSL. 2021. Oregon administrative rules (OARs). Oar 141 Division 90. Standards and Requirements for Wetland Delineation Reports Submitted to the Department. Available at: https://oregon.public.law/rules/oar_141-090-0035#google_vignette .

DSL. 2019. A Guide to the Removal-Fill Permit Process. Prepared by the Oregon Department of State Lands. Updated 2019. Available at: https://www.oregon.gov/dsl/WW/Documents/Removal_Fill_Guide.pdf. Accessed January 2022.

DSL (Oregon Department of State Lands). 2024. Local Wetland Inventories. Accessed online at: https://www.oregon.gov/dsl/ww/Pages/Inventories.aspx. Accessed November 2024

Munsell Color. 2010. Munsell Soil Color Charts: with Genuine Munsell Color Chips. Published 2010. Grand Rapids, Michigan.

Nadeau, T-L., Coulombe, R., and Hicks, D. 2024. User Manual for the Stream Function Assessment Method for Oregon. Version 2.0. Document No. EPA 910-B-24-001. U.S. Environmental Protection Agency, Region 10, Seattle, WA, Oregon Department of State Lands, Salem, OR.

Oregon, State of. 2024. The Oregon Map (ORMAP). Assessor tax lot maps. Available at: http://www.ormap.net/. Accessed November 2024

PACE. (2024, September 13). PACE Engineers. *Molalla Water Intake Predesign Topographic Survey*.

Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. Available online at the following link: https://websoilsurvey.sc.egov.usda.gov/. Accessed November 2024

USACE (U.S. Army Corps of Engineers). 1987. Corps of Engineers Wetlands Delineation Manual. Wetlands Research Program Technical Report Y-87-1. Prepared by U.S. Army Corps of Engineers Waterways Experiment Station. Published January 1987.

_____. 2010. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0). ERDC/EL TR-10-3. Prepared by U.S. Army Corps of Engineers Engineer Research and Development Center, Wetland Regulatory Assistance Program. Published May 2010. Available at: ERDC/EL TR-10-3, Regional Supplement to the Corps

of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0) (oclc.org).

_____. 2020. Western Mountains, Valleys & Coast 2020 Regional Wetland Plant List. U.S. Army Corps of Engineers 2020. WMVC Regional Wetland Plant List, version 3.5. Available at: https://cwbi-app.sec.usace.army.mil/nwpl_static/v34/home/home.html. Accessed February 2022.

_____. 2022, November 29. National ordinary high water mark field delineation manual for rivers and streams: Interim Version. Engineer Research and Development Center. Available at: https://www.erdc.usace.army.mil/Media/Publication-Notices/Article/3231057/national-ordinary-high-water-mark-field-delineation-manual-for-rivers-and-strea/

USFWS (U.S. Fish and Wildlife Service). 2024. National Wetland Inventory Wetlands Mapper. Available at: https://www.fws.gov/wetlands/data/mapper.html. Accessed November 2024.

U.S. Geological Survey (USGS). 2022. Streamstats: Streamflow Statistics and Spatial Analysis Tools for Water-Resources Applications. Available at: https://streamstats.usgs.gov/ss/. Accessed November 2024.

USGS. 2024. EarthExplorer. https://earthexplorer.usgs.gov/

USGS. 2024. Molalla River Near Canby, OR – 14200000 Monitoring Location. Available at: https://waterdata.usgs.gov/monitoring-location/14200000/#parameterCode=00065&period=P30D&showMedian=false

WTI (Wetland Training Institute, Inc.). 2017. 2017 Pocket Guide to Hydric Soil Field Indicators. Based on Field Indicators of Hydric Soils in the United States v.7 with Updates. Prepared by Wetland Training Institute, Inc. Published 2013. Glenwood, New Mexico.

APPENDIX F. DETAILED COST ESTIMATES

CITY OF MOLALLA, OREGON
MOLALLA RIVER INTAKE STRUCTURE - FIXED SLOPED SCREENS
SCHEMATIC DESIGN COST ESTIMATE

ITEM	DESCRIPTION			ESTIMATED COST
1	Construction Site Preparations		$	142,000.00
2	Installation and Removal of Cofferdams		$	186,000.00
3	Excavation and Backfill		$	124,000.00
4	Demolition		$	56,000.00
5	Intake Strcuture		$	515,000.00
6	Pipeline		$	317,000.00
7	Channel and Bank Restoration		$	264,000.00
8	Electrical		$	187,000.00
9	Mechanical		$	544,000.00
	Construction Subtotal		$	2,335,000.00
	Mobilization, GC, OH&P	15.0%	$	350,250.00
	Contingency	30.0%	$	700,500.00
	Total Construction Estimate		$	3,385,750.00
	Site Investigation (Survey/Geotech)	LS	$	25,000.00
	Hydraulic Modeling	LS	$	50,000.00
	No Rise Evaluation	LS	$	30,000.00
	Environmental Permitting	LS	$	150,000.00
	Land Use Permitting	LS	$	30,000.00
	Perliminary/Final Design	15.0%	$	507,862.50
	Construction Administration & Inspection	15.0%	$	507,862.50
	Total Estimated Project Cost		$	4,686,475.00

Estimated Construction Costs, Mobilization Costs, Contingency Fee, Design Fees, and Construction Inspection Fees for New Intake

Component: Site Preparation

Item	Description	Notes	L	W	D	Qty	Units	Unit Cost	Task Cost	Item Cost
1	Clear and Grub - Access Road									$ 24,300.00
	Clear and Grub existing access road & site topo	*Remove trees, shrubs and ground vegetation*	*600*	*30*	*1*	*0.4*	*ac*	*$ 10,000.00*	*$ 4,200.00*	
	Load and Haul Clear & Grub to Disposal Site	*Haul material to disposal site*	*600*	*30*	*1*	*670*	*yd^3*	*$ 30.00*	*$ 20,100.00*	
2	Clear and Grub - Pipeline Corridor									$ 16,000.00
	Clear and Grub existing topo along access road	*Remove trees, shrubs and ground vegetation*	600	20	1	*0.3*	*ac*	*$ 10,000.00*	*$ 2,800.00*	
	Load and Haul Clear & Grub to Disposal Site	*Haul material to disposal site*	600	20	1	*440*	*yd^3*	*$ 30.00*	*$ 13,200.00*	
3	Clear and Grub - Intake Structure									$ 6,900.00
	Clear and Grub existing bank topo	*Remove trees, shrubs and ground vegetation*	100	50	1	*0.1*	*ac*	*$ 10,000.00*	*$ 1,200.00*	
	Load and Haul Clear & Grub to Disposal Site	*Haul material to disposal site*	100	50	1	*190*	*yd^3*	*$ 30.00*	*$ 5,700.00*	
4	Erosion and Sediment Control									$ 20,000.00
	Erosion and Sediment Control					1	ls	$ 10,000.00	*$ 10,000.00*	
	Construction Fencing					1	ls	$ 10,000.00	*$ 10,000.00*	
5	Access Road Restoration									$ 34,000.00
	Access Road Restoration	Crushed Rock Surfacing	600	15	1	340	cy	*$ 100.00*	*$ 34,000.00*	
6	Site Restoration Allowance									$ 40,000.00
	Bollards, gates, fence, housekeeping slabs, etc.	*Allowance*				1	LS	$ 40,000.00	*$ 40,000.00*	

Estimated Component Cost $ 142,000.00
(roundup to nearest $1k)

Component: Cofferdams

Item	Description	Notes	L	W	H	Qty	Units	Unit Cost	Task Cost	Item Cost
1	Cofferdam No 1 around Intake & Apron									$ 72,600.00
	Sheet Piles: Drive, Extract and Salvage	*30 ft sheet piles driven 20 ft into riverbed*	100		30	*33*	*tons*	*$ 2,200.00*	*$ 72,600.00*	
2	Cofferdam No 2 around Existing Intake									$ 72,600.00
	Sheet Piles: Drive, Extract and Salvage	*30 ft sheet piles driven 20 ft into riverbed*	100		30	*33*	*tons*	*$ 2,200.00*	*$ 72,600.00*	
3	Isolate Grade Control Structure Work Areas									$ 40,000.00
	Bulk Bag Cofferdams					400	lf	*$ 100.00*	*$ 40,000.00*	
4										
5										
6										
7										

Estimated Component Cost $ 186,000.00
(roundup to nearest $1k)

MOLALLA RIVER POTABLE WATER INTAKE - FIXED SLOPED SCREENS *April 4, 2025*

Component: Excavation and Backfill

Item	Description	Notes	L	W	D	Qty	Units	Unit Cost	Task Cost	Item Cost
1	General Excavation									$ 34,800.00
	Excavate Existing Site Topo at Intake Site	*General excavation for intake structure*	36	36	12	*580*	*yd³*	*$ 30.00*	*$ 17,400.00*	
	Load and Haul Site Topo to Storage Site	*Haul excavated material to off site stockpile*	36	36	12	*580*	*yd³*	*$ 30.00*	*$ 17,400.00*	
2	Structural Excavation									$ 3,000.00
	Structural Excavation for Footings and Floors	*Excavation for intake footings*	28	24	2	*50*	*yd³*	*$ 30.00*	*$ 1,500.00*	
	Load & Haul Structural Excavation to Storage Site	*Haul excavated material to off site stockpile*	28	24	2	*50*	*yd³*	*$ 30.00*	*$ 1,500.00*	
3	Structure Backfill									$ 10,800.00
	Load & Haul Native Material from Storage Site to Inta	*Assume native material from stockpile*	*20*	*20*	*12*	*180*	*yd³*	*$ 30.00*	*$ 5,400.00*	
	Grading & Compaction of Fill	*Installation, grading & compaction of native material*	*20*	*20*	*12*	*180*	*yd³*	*$ 30.00*	*$ 5,400.00*	
4	River Channel Excavation & Grading									$ 75,000.00
	Excavate for Grade Control		150	10	5	*280*	*yd³*	*$ 30.00*	*$ 8,400.00*	
	River Channel Grading		200	75	2	*1110*	*yd³*	*$ 30.00*	*$ 33,300.00*	
	Native Alluvium Fill		200	75	2	*1110*	*yd³*	*$ 30.00*	*$ 33,300.00*	
5										
6										
7										
8										

Estimated Component Cost $ 124,000.00
(roundup to nearest $1k)

Component: Demolition

Item	Description	Notes	L	W	D	Qty	Units	Unit Cost	Task Cost	Item Cost
1	Existing Pump Station Demolition									$ 55,050.00
	General Demolition Labor & Equip	*Crew Cost*				5	days	*$ 8,000.00*	*$ 40,000.00*	
	Demolition of Existing Pump Station Walls	*General demolition of intake structure*	50	20	1	*40*	*yd^3*	*$ 100.00*	*$ 4,000.00*	
	Demolition of Existing Pump Station Pump Floor	*General demolition of intake structure*	14	10	1.5	*10*	*yd^3*	*$ 100.00*	*$ 1,000.00*	
	Demolition of Existing Pump Station Top Floor	*General demolition of intake structure*	22	22	1	*20*	*yd^3*	*$ 100.00*	*$ 2,000.00*	
	Load and Haul Demolition to Disposal Site	*Haul demolition material to disposal site*				*70*	*yd^3*	*$ 115.00*	*$ 8,050.00*	
2										
3										
4										
5										
6										
7										
8										

Estimated Component Cost $ 56,000.00
(roundup to nearest $1k)

CITY OF MOLALLA, OREGON
MOLALLA RIVER POTABLE WATER INTAKE - FIXED SLOPED SCREENS
Component: Intake Structure

Estimate of Probable Cost - 10 Percent Design Level
April 4, 2025

Item	Description	Notes	L	W	D	Qty	Units	Unit Cost	Task Cost	Item Cost
1	Work Area Pumping									$ 55,200.00
	Dewatering Pumps	*Assume 2 pumps for 45 days each*				*90*	*Days*	*$ 500.00*	*$ 45,000.00*	
	Baker Tank for Desilting	*Weekly Rental*				*12*	*week*	*$ 850.00*	*$ 10,200.00*	
2	Structural Fill									$ 2,400.00
	Grading & Compaction of Native Material	*Bucket teeth grading & plate compaction*	24	24		*60*	*yd^2*	*$ 5.00*	*$ 300.00*	
	Imported Granular Structural Fill	*3/4 minus gravel delivered to project site*	24	24	1	*20*	*yd^3*	*$ 100.00*	*$ 2,000.00*	
	Compaction & Final Grading of Fill	*Installation, grading and compaction of gravel*	24	24	1	*20*	*yd^3*	*$ 5.00*	*$ 100.00*	
3	Concrete									$ 190,900.00
	Concrete Footings	*Assume footings 36" wide & 12" thick*	128	3	1	*14*	*yd^3*	*$ 1,300.00*	*$ 18,200.00*	
	Concrete Walls	*Assume walls 12" thick*	78	15	1	*43*	*yd^3*	*$ 2,000.00*	*$ 86,000.00*	
	Concrete Floor - Interior	*Assume floors 12" thick*	88	3	1	*10*	*yd^3*	*$ 1,300.00*	*$ 13,000.00*	
	Concrete Floor - Apron	*Assume floors 12" thick*	18	4	1	*3*	*yd^3*	*$ 1,300.00*	*$ 3,900.00*	
	Concrete Wing Walls	*Assume walls 12" thick, avg height is 8'*	60	1	8	*18*	*yd^3*	*$ 2,000.00*	*$ 36,000.00*	
	Concrete Deflector Wall	*Assume walls 12" thick*	6	1	4	*0.9*	*yd^3*	*$ 2,000.00*	*$ 1,800.00*	
	Deflector and wing wall footings	*Assume 3' wide by 12" tall*	60	3	1	*7*	*yd^3*	*$ 2,000.00*	*$ 14,000.00*	
	Permanent Sheet Piles at Front of Intake	*Assume 10' deep for scour protection and at wing walls*	30		15	*5.0*	*tons*	*$ 3,600.00*	*$ 18,000.00*	
4	Intake Screens									$ 111,000.00
	Purchase New 48-in x 30-in Profile Bar Screen Units (3 ea)	*Assume complete units purchased from Vendor*	4	2.5	3	30	sf	$ 2,000.00	*$ 60,000.00*	
	Install New Profile Bar Screen Units	*Assume contractor will install & test*				3	ea	$ 5,000.00	*$ 15,000.00*	
	Purchase New 48-in x 136-in Bulkhead Units	*Assume complete units purchased from Vendor*				3	ea	$ 10,000.00	*$ 30,000.00*	
	Install New Bulkhead Units	*Assume contractor will install & test*				3	ea	$ 2,000.00	*$ 6,000.00*	
5	Slide Gates									$ 45,000.00
	Purchase New Slide Gates	*Assume complete units purchased from Vendor*				3	ea	$ 10,000.00	*$ 30,000.00*	
	Install New Slide Gates	*Assume contractor will install & test*				3	ea	$ 5,000.00	*$ 15,000.00*	
6	Metal Work									$ 30,000.00
	Concrete Embeds for Intake Screen & Gates	*Assume Contractor will fabricate & install*				1	ls	$ 10,000.00	*$ 10,000.00*	
	Structural Grating for Top of Intake	*Assume Contractor will fabricate & install*				1	ls	$ 10,000.00	*$ 10,000.00*	
	Handrails for Perimeter of Intake	*Assume Contractor will fabricate & install*				1	ls	$ 5,000.00	*$ 5,000.00*	
	Ladders for Access into Intake	*Assume Contractor will fabricate & install*				1	ls	$ 5,000.00	*$ 5,000.00*	
7	Air Burst Manifolds									$ 30,000.00
	Purchase New 48-in x 30-in Air Burst Manifold Units	*Assume complete units purchased from Vendor*				3	ea	$ 7,000.00	*$ 21,000.00*	
	Install New Air Burst Manifold Units	*Assume contractor will install & test*				3	ea	$ 3,000.00	*$ 9,000.00*	
8	*Existing Intake*									$ 50,000.00
	New Trash Rack and Anchor System					1	LS	$ 50,000.00	*$ 50,000.00*	

Estimated Component Cost $ 515,000.00
(roundup to nearest $1k)

CITY OF MOLALLA, OREGON
MOLALLA RIVER POTABLE WATER INTAKE - FIXED SLOPED SCREENS
Component: Pipeline from Intake to Pump Statio

Estimate of Probable Cost - 10 Percent Design Level
April 4, 2025

Item	Description	Notes	L	W	D	Qty	Units	Unit Cost	Task Cost	Item Cost
1	Excavation									$ 108,000.00
	Excavate Existing Site Topo at along Pipeline Corrido	*General excavation for pipeline*	600	6	14	*1870*	*yd^3*	*$ 30.00*	*$ 56,100.00*	
	Load and Haul Site Topo to Storage Site	*Haul excavated material to off site stockpile*	600	6	14	*1870*	*yd^3*	*$ 15.00*	*$ 28,050.00*	
	Structural Excavation for Pipe Bedding	*Excavation for pipe bedding*	600	6	1	*130*	*yd^3*	*$ 30.00*	*$ 3,900.00*	
	Load & Haul Structural Excavation to Storage Site	*Haul excavated material to off site stockpile*	600	6	1	*130*	*yd^3*	*$ 15.00*	*$ 1,950.00*	
	Dewatering	*Dewatering pump + labor to relocate each day*				*12*	*day*	*$ 1,500.00*	*$ 18,000.00*	
2	Pipe Bedding									$ 18,300.00
	Grading & Compaction of Native Material	*Bucket teeth grading & plate compaction*	600	6		*400*	*yd^2*	*$ 10.00*	*$ 4,000.00*	
	Imported Granular Pipe Bedding	*3/4 minus gravel delivered to project site*	600	6	1	*130*	*yd^3*	*$ 100.00*	*$ 13,000.00*	
	Installation & Compaction of Pipe Bedding	*Installation and compaction of bedding gravel*	600	6	1	*130*	*yd^3*	*$ 10.00*	*$ 1,300.00*	
4	Pipe									$ 134,000.00
	24-in PVC Pipe	*Bell & spigot pipe with rubber gakets*				*600*	*lf*	*$ 160.00*	*$ 96,000.00*	
	Fittings	*Flanges to bolt pipe to Intake and Manhole*				*2*	*ea*	*$ 7,000.00*	*$ 14,000.00*	
	24" Fittings	*Bends*				*3*	*ea*	*$ 3,000.00*	*$ 9,000.00*	
	Installation	*Equipment & Labor to install PVC Pipe*				*1*	*ls*	*$ 15,000.00*	*$ 15,000.00*	
5	Structure Backfill									$ 56,000.00
	Load & Haul Native Material from Storage Site to Pipe	*Assume native material from stockpile*	600	6	12	*1600*	*yd^3*	*$ 25.00*	*$ 40,000.00*	
	Installation, Grading & Compaction of Fill	*Installation, grading & compaction of native material*	600	6	12	*1600*	*yd^3*	*$ 10.00*	*$ 16,000.00*	

Estimated Component Cost $ 317,000.00
(roundup to nearest $1k)

Item	Description	Notes	L	W	D	Qty	Units	Unit Cost	Task Cost	Item Cost
1	Bank Protection - Upstream of Intake Structure									$ 14,000.00
	Imported Rip Rap	*24 to 36 in angular boulders delivered to project site*	*50*	*12*	*3*	*70*	*yd^3*	$ 150.00	*$ 10,500.00*	
	Installation of Rip Rap along Bank U/S of Intake	*Installation of Rip Rap*	*50*	*12*	*3*	*70*	*yd^3*	$ 50.00	*$ 3,500.00*	
2	Bank Protection - Downstream of Intake Structure									$ 14,000.00
	Imported Rip Rap	*24 to 36 in angular boulders delivered to project site*	*50*	*12*	*3*	*70*	*yd^3*	$ 150.00	*$ 10,500.00*	
	Installation of Rip Rap along Bank D/S of Intake	*Installation of Rip Rap*	*50*	*12*	*3*	*70*	*yd^3*	$ 50.00	*$ 3,500.00*	
3	Structure Protection - Along Toe of Screen Apron									$ 2,000.00
	Imported Rip Rap	*24 to 36 in angular boulders delivered to project site*	*20*	*3*	*3*	*10*	*yd^3*	$ 150.00	*$ 1,500.00*	
	Installation of Rip Rap along Front, Back & End of Str	*Installation of Rip Rap*	*20*	*3*	*3*	*10*	*yd^3*	$ 50.00	*$ 500.00*	
4	Channel Protection - Channel Bottom Upstream of Intake									$ 800.00
	Imported Rip Rap	*18 to 24 in river boulders delivered to project site*	*20*	*2*	*3*	*4*	*yd^3*	$ 150.00	*$ 600.00*	
	Installation of Rip Rap on Channel Bottom U/S of Inta	*Installation of Rip Rap*	*20*	*2*	*3*	*4*	*yd^3*	$ 50.00	*$ 200.00*	
5	Channel Protection - Channel Bottom Downstream of Intake									$ 800.00
	Imported Rip Rap	*18 to 24 in river boulders delivered to project site*	*20*	*2*	*3*	*4*	*yd^3*	$ 150.00	*$ 600.00*	
	Installation of Rip Rap on Channel Bottom D/S of Inta	*Installation of Rip Rap*	*20*	*2*	*3*	*4*	*yd^3*	$ 50.00	*$ 200.00*	
6	Revegetation									$ 31,570.00
	Access Road	*Upland Seed Mix on Cut Slopes*	400	20		*890*	*yd^2*	$ 5.00	*$ 4,450.00*	
	Work Areas around Intake & Pump Station	*Upland Seed Mix on Disturbed Areas*	50	50		*280*	*yd^2*	$ 5.00	*$ 1,400.00*	
	Rip Rapped Banks	*Willow Sprigs along Toe*	100	4		*100*	ea	$ 5.00	*$ 500.00*	
		Planting / vegetation allowance				*1*	LS	$ 25,000.00	*$ 25,000.00*	
		Upland Seed Mix along Top	100	4		*44*	*yd^2*	$ 5.00	*$ 220.00*	
7	Grade Control Structures									$ 200,000.00
	Embedded boulder spurs into river bottom	Downstream of Intake to prevent channel erosion				*200*	*LF*	*$ 1,000.00*	*$ 200,000.00*	

Estimated Component Cost $ 264,000.00
(roundup to nearest $1k)

Item	Description	Notes	L	W	D	Qty	Units	Unit Cost	Task Cost	Item Cost
1	Electrical Service									$ 50,000.00
	Electric Service to Intake Structure	*Assume new service from existing pump station*				1	ls	$ 50,000.00	*$ 50,000.00*	
2	Electrical Panels & Wiring									$ 40,000.00
	Control Panels for Intake Screens	*Assume Contractor will purchase & install*				1	ls	$ 30,000.00	*$ 30,000.00*	
	Conduit and Wiring to Intake Screens	*Assume Contractor will purchase & install*				1	ls	$ 10,000.00	*$ 10,000.00*	
3	SCADA System Control Panel									$ 40,000.00
	SCADA Control Panel	*Assume Contractor will purchase & install*				1	ls	$ 15,000.00	*$ 15,000.00*	
	Water Level Sensors	*Assume Contractor will purchase & install*				1	ls	$ 10,000.00	*$ 10,000.00*	
	Conduit and Wiring to SCADA System	*Assume Contractor will purchase & install*				1	ls	$ 5,000.00	*$ 5,000.00*	
	Control system programming					1	ls	$ 10,000.00	*$ 10,000.00*	
4	Air Burst System Control Panel									$ 40,000.00
	Air Burst Control Panel	*Assume Contractor will purchase & install*				1	ls	$ 25,000.00	*$ 25,000.00*	
	Water Level Sensors	*Assume Contractor will purchase & install*				1	ls	$ 10,000.00	*$ 10,000.00*	
	Conduit and Wiring to Air Burst Panel	*Assume Contractor will purchase & install*				1	ls	$ 5,000.00	*$ 5,000.00*	
5	*General Contractors Overhead and Profit*	*10 percent mark up of sub-contractors cost*				0.1	ls	##########	*$ 17,000.00*	$ 17,000.00
6										

$170,000.00

Estimated Component Cost $ 187,000.00

CITY OF MOLALLA, OREGON
MOLALLA RIVER POTABLE WATER INTAKE - FIXED SLOPED SCREENS
Component: Mechanical

Estimate of Probable Cost - 10 Percent Design Level
April 4, 2025

Item	Description	Notes	L	W	D	Qty	Units	Unit Cost	Task Cost	Item Cost
1	Mechanical Building									$ 205,000.00
	CMU Building for Intake Mechanical Components	*Assume 20x20 CMU building w/double doors*	20	20		*400*	*ft²*	*$ 350.00*	*$ 140,000.00*	
	Building site grading					1	LS	*$ 2,000.00*	*$ 2,000.00*	
	Concrete elevated base		80	1	8	24	cy	*$ 2,000.00*	*$ 48,000.00*	
	Stairs and guard rails					1	LS	*$ 15,000.00*	*$ 15,000.00*	
2	Air Compressors									$ 42,000.00
	Two stage air compressors	*Compressors w/ 10 hp motors*				*2*	*ea*	*$ 16,000.00*	*$ 32,000.00*	
	Install	*Piping, valves, accessories, drier, filters, etc.*				*2*	*ea*	*$ 5,000.00*	*$ 10,000.00*	
3	Storage Tanks									$ 10,000.00
	Vertical Storage Tanks	*Two hundred gallon tanks*				*2*	*ea*	*$ 5,000.00*	*$ 10,000.00*	
	Install									
4	Piping									$ 70,000.00
	Mechanical Building Piping	*Piping to Connect Compressors and Storage Tanks*				*1*	*ls*	*$ 5,000.00*	*$ 5,000.00*	
	Piping to Intake Structure	*Piping to Connect Mechanical Building to Intake Structure*				*300*	*LF*	*$ 80.00*	*$ 24,000.00*	
	Intake Structure Piping	*Piping to Connect Supply Piping to Manifolds*				*1*	*ls*	*$ 5,000.00*	*$ 5,000.00*	
	Control valves	*In building*				*5*	*ea*	*$ 3,000.00*	*$ 15,000.00*	
	Piping to Existing Intake Structure	*Piping to Connect Mechanical Building to Intake Structure*				200	LF	*$ 80.00*	*$ 16,000.00*	
	Existing Intake Structure Piping Connection	*Piping to Connect Supply Piping to Existing Screens*				*1*	*ls*	*$ 5,000.00*	*$ 5,000.00*	
5	New Intake Pump									$ 190,000.00
	Pump					1	LS	*$ 100,000.00*	*$ 100,000.00*	
	Pump Install					1	LS	*$ 30,000.00*	*$ 30,000.00*	
	Piping & Valves					1	LS	$ 30,000.00	*$ 30,000.00*	
	Electrical / Controls Upgrades					1	LS	$ 30,000.00	*$ 30,000.00*	
6	*General Contractors Overhead and Profit*	*10 percent mark up of sub-contractors cost*				0.1	ls	$ 270,000.00	*$ 27,000.00*	$ 27,000.00

Estimated Component Cost $ 544,000.00
(roundup to nearest $1k)

CITY OF MOLALLA, OREGON
MOLALLA RIVER INTAKE STRUCTURE - TEE SCREENS
SCHEMATIC DESIGN COST ESTIMATE

ITEM	DESCRIPTION			ESTIMATED COST	
1	Construction Site Preparations		$	142,000.00	
2	Installation and Removal of Cofferdams		$	186,000.00	
3	Excavation and Backfill		$	124,000.00	
4	Demolition		$	56,000.00	
5	Intake Strcuture		$	515,000.00	
6	Pipeline		$	317,000.00	
7	Channel and Bank Restoration		$	264,000.00	
8	Electrical		$	187,000.00	
9	Mechanical		$	535,000.00	502,000
	Construction Subtotal		$	2,326,000.00	2,293,000
	Mobilization, GC, OH&P	15.0%	$	348,900.00	343,950
	Contingency	30.0%	$	697,800.00	687,900
	Total Construction Estimate		$	3,372,700.00	3,324,850
	Site Investigation (Survey/Geotech)	LS	$	25,000.00	
	Hydraulic Modeling	LS	$	50,000.00	
	No Rise Evaluation	LS	$	30,000.00	
	Environmental Permitting	LS	$	150,000.00	
	Land Use Permitting	LS	$	30,000.00	
	Perliminary/Final Design	15.0%	$	505,905.00	498,727.50
	Construction Administration & Inspection	15.0%	$	505,905.00	498,727.50
	Total Estimated Project Cost		$	4,669,510.00	4,607,305

Item	Description	Notes	L	W	D	Qty	Units	Unit Cost	Task Cost	Item Cost
1	Clear and Grub - Access Road									$ 24,300.00
	Clear and Grub existing access road & site topo	*Remove trees, shrubs and ground vegetation*	*600*	*30*	*1*	*0.4*	*ac*	*$ 10,000.00*	*$ 4,200.00*	
	Load and Haul Clear & Grub to Disposal Site	*Haul material to disposal site*	*600*	*30*	*1*	*670*	*yd^3*	*$ 30.00*	*$ 20,100.00*	
2	Clear and Grub - Pipeline Corridor									$ 16,000.00
	Clear and Grub existing topo along access road	*Remove trees, shrubs and ground vegetation*	600	20	1	*0.3*	*ac*	*$ 10,000.00*	*$ 2,800.00*	
	Load and Haul Clear & Grub to Disposal Site	*Haul material to disposal site*	600	20	1	*440*	*yd^3*	*$ 30.00*	*$ 13,200.00*	
3	Clear and Grub - Intake Structure									$ 6,900.00
	Clear and Grub existing bank topo	*Remove trees, shrubs and ground vegetation*	100	50	1	*0.1*	*ac*	*$ 10,000.00*	*$ 1,200.00*	
	Load and Haul Clear & Grub to Disposal Site	*Haul material to disposal site*	100	50	1	*190*	*yd^3*	*$ 30.00*	*$ 5,700.00*	
4	Erosion and Sediment Control									$ 20,000.00
	Erosion and Sediment Control					1	ls	$ 10,000.00	*$ 10,000.00*	
	Construction Fencing					1	ls	$ 10,000.00	*$ 10,000.00*	
5	Access Road Restoration									$ 34,000.00
	Access Road Restoration	Crushed Rock Surfacing	600	15	1	340	cy	*$ 100.00*	*$ 34,000.00*	
6	Site Restoration Allowance									$ 40,000.00
	Bollards, gates, fence, housekeeping slabs, etc.	*Allowance*				1	LS	$ 40,000.00	*$ 40,000.00*	

Estimated Component Cost $ 142,000.00
(roundup to nearest $1k)

Component: Cofferdams

Item	Description	Notes	L	W	H	Qty	Units	Unit Cost	Task Cost	Item Cost
1	Cofferdam No 1 around Intake & Apron									$ 72,600.00
	Sheet Piles: Drive, Extract and Salvage	*30 ft sheet piles driven 20 ft into riverbed*	100		30	*33*	*tons*	*$ 2,200.00*	*$ 72,600.00*	
2	Cofferdam No 2 around Existing Intake									$ 72,600.00
	Sheet Piles: Drive, Extract and Salvage	*30 ft sheet piles driven 20 ft into riverbed*	100		30	*33*	*tons*	*$ 2,200.00*	*$ 72,600.00*	
3	Isolate Grade Control Structure Work Areas									$ 40,000.00
	Bulk Bag Cofferdams					400	lf	*$ 100.00*	*$ 40,000.00*	
4										
5										
6										
7										

Estimated Component Cost $ 186,000.00
(roundup to nearest $1k)

CITY OF MOLALLA, OREGON
MOLALLA RIVER POTABLE WATER INTAKE - TEE SCREENS
Component: Excavation and Backfill

Estimate of Probable Cost - 10 Percent Design Level
April 4, 2025

Item	Description	Notes	L	W	D	Qty	Units	Unit Cost	Task Cost	Item Cost
1	General Excavation									$ 34,800.00
	Excavate Existing Site Topo at Intake Site	*General excavation for intake structure*	36	36	12	*580*	*yd³*	*$ 30.00*	*$ 17,400.00*	
	Load and Haul Site Topo to Storage Site	*Haul excavated material to off site stockpile*	36	36	12	*580*	*yd³*	*$ 30.00*	*$ 17,400.00*	
2	Structural Excavation									$ 3,000.00
	Structural Excavation for Footings and Floors	*Excavation for intake footings*	28	24	2	*50*	*yd³*	*$ 30.00*	*$ 1,500.00*	
	Load & Haul Structural Excavation to Storage Site	*Haul excavated material to off site stockpile*	28	24	2	*50*	*yd³*	*$ 30.00*	*$ 1,500.00*	
3	Structure Backfill									$ 10,800.00
	Load & Haul Native Material from Storage Site to Inta	*Assume native material from stockpile*	*20*	*20*	*12*	*180*	*yd³*	*$ 30.00*	*$ 5,400.00*	
	Grading & Compaction of Fill	*Installation, grading & compaction of native material*	*20*	*20*	*12*	*180*	*yd³*	*$ 30.00*	*$ 5,400.00*	
4	River Channel Excavation & Grading									$ 75,000.00
	Excavate for Grade Control		150	10	5	*280*	*yd³*	*$ 30.00*	*$ 8,400.00*	
	River Channel Grading		200	75	2	*1110*	*yd³*	*$ 30.00*	*$ 33,300.00*	
	Native Alluvium Fill		200	75	2	*1110*	*yd³*	*$ 30.00*	*$ 33,300.00*	
5										
6										
7										
8										

Estimated Component Cost $ 124,000.00
(roundup to nearest $1k)

Component: Demolition

Item	Description	Notes	L	W	D	Qty	Units	Unit Cost	Task Cost	Item Cost
1	Existing Pump Station Demolition									$ 55,050.00
	General Demolition Labor & Equip	*Crew Cost*				5	days	*$ 8,000.00*	*$ 40,000.00*	
	Demolition of Existing Pump Station Walls	*General demolition of intake structure*	50	20	1	*40*	*yd^3*	*$ 100.00*	*$ 4,000.00*	
	Demolition of Existing Pump Station Pump Floor	*General demolition of intake structure*	14	10	1.5	*10*	*yd^3*	*$ 100.00*	*$ 1,000.00*	
	Demolition of Existing Pump Station Top Floor	*General demolition of intake structure*	22	22	1	*20*	*yd^3*	*$ 100.00*	*$ 2,000.00*	
	Load and Haul Demolition to Disposal Site	*Haul demolition material to disposal site*				*70*	*yd^3*	*$ 115.00*	*$ 8,050.00*	
2										
3										
4										
5										
6										
7										
8										

Estimated Component Cost $ 56,000.00
(roundup to nearest $1k)

CITY OF MOLALLA, OREGON
MOLALLA RIVER POTABLE WATER INTAKE - TEE SCREENS
Component: Intake Structure

Estimate of Probable Cost - 10 Percent Design Level
April 4, 2025

Item	Description	Notes	L	W	D	Qty	Units	Unit Cost	Task Cost	Item Cost
1	Work Area Pumping									$ 55,200.00
	Dewatering Pumps	*Assume 2 pumps for 45 days each*				*90*	*Days*	*$ 500.00*	*$ 45,000.00*	
	Baker Tank for Desilting	*Weekly Rental*				*12*	*week*	*$ 850.00*	*$ 10,200.00*	
2	Structural Fill									$ 2,400.00
	Grading & Compaction of Native Material	*Bucket teeth grading & plate compaction*	24	24		*60*	*yd^2*	*$ 5.00*	*$ 300.00*	
	Imported Granular Structural Fill	*3/4 minus gravel delivered to project site*	24	24	1	*20*	*yd^3*	*$ 100.00*	*$ 2,000.00*	
	Compaction & Final Grading of Fill	*Installation, grading and compaction of gravel*	24	24	1	*20*	*yd^3*	*$ 5.00*	*$ 100.00*	
3	Concrete									$ 190,900.00
	Concrete Footings	*Assume footings 36" wide & 12" thick*	128	3	1	*14*	*yd^3*	*$ 1,300.00*	*$ 18,200.00*	
	Concrete Walls	*Assume walls 12" thick*	78	15	1	*43*	*yd^3*	*$ 2,000.00*	*$ 86,000.00*	
	Concrete Floor - Interior	*Assume floors 12" thick*	88	3	1	*10*	*yd^3*	*$ 1,300.00*	*$ 13,000.00*	
	Concrete Floor - Apron	*Assume floors 12" thick*	18	4	1	*3*	*yd^3*	*$ 1,300.00*	*$ 3,900.00*	
	Concrete Wing Walls	*Assume walls 12" thick, avg height is 8'*	60	1	8	*18*	*yd^3*	*$ 2,000.00*	*$ 36,000.00*	
	Concrete Deflector Wall	*Assume walls 12" thick*	6	1	4	*0.9*	*yd^3*	*$ 2,000.00*	*$ 1,800.00*	
	Deflector and wing wall footings	*Assume 3' wide by 12" tall*	60	3	1	*7*	*yd^3*	*$ 2,000.00*	*$ 14,000.00*	
	Permanent Sheet Piles at Front of Intake	*Assume 10' deep for scour protection and at wing walls*	30		15	*5.0*	*tons*	*$ 3,600.00*	*$ 18,000.00*	
4	Intake Screens									$ 111,000.00
	Purchase New 48-in x 30-in Profile Bar Screen Units (3 ea)	*Assume complete units purchased from Vendor*	4	2.5	3	30	sf	$ 2,000.00	*$ 60,000.00*	
	Install New Profile Bar Screen Units	*Assume contractor will install & test*				3	ea	$ 5,000.00	*$ 15,000.00*	
	Purchase New 48-in x 136-in Bulkhead Units	*Assume complete units purchased from Vendor*				3	ea	$ 10,000.00	*$ 30,000.00*	
	Install New Bulkhead Units	*Assume contractor will install & test*				3	ea	$ 2,000.00	*$ 6,000.00*	
5	Slide Gates									$ 45,000.00
	Purchase New Slide Gates	*Assume complete units purchased from Vendor*				3	ea	$ 10,000.00	*$ 30,000.00*	
	Install New Slide Gates	*Assume contractor will install & test*				3	ea	$ 5,000.00	*$ 15,000.00*	
6	Metal Work									$ 30,000.00
	Concrete Embeds for Intake Screen & Gates	*Assume Contractor will fabricate & install*				1	ls	$ 10,000.00	*$ 10,000.00*	
	Structural Grating for Top of Intake	*Assume Contractor will fabricate & install*				1	ls	$ 10,000.00	*$ 10,000.00*	
	Handrails for Perimeter of Intake	*Assume Contractor will fabricate & install*				1	ls	$ 5,000.00	*$ 5,000.00*	
	Ladders for Access into Intake	*Assume Contractor will fabricate & install*				1	ls	$ 5,000.00	*$ 5,000.00*	
7	Air Burst Manifolds									$ 30,000.00
	Purchase New 48-in x 30-in Air Burst Manifold Units	*Assume complete units purchased from Vendor*				3	ea	$ 7,000.00	*$ 21,000.00*	
	Install New Air Burst Manifold Units	*Assume contractor will install & test*				3	ea	$ 3,000.00	*$ 9,000.00*	
8	*Existing Intake*									$ 50,000.00
	New Trash Rack and Anchor System					1	LS	$ 50,000.00	*$ 50,000.00*	

Estimated Component Cost $ 515,000.00
(roundup to nearest $1k)

Item	Description	Notes	L	W	D	Qty	Units	Unit Cost	Task Cost	Item Cost
1	Excavation									$ 108,000.00
	Excavate Existing Site Topo at along Pipeline Corrido	*General excavation for pipeline*	600	6	14	*1870*	*yd^3*	*$ 30.00*	*$ 56,100.00*	
	Load and Haul Site Topo to Storage Site	*Haul excavated material to off site stockpile*	600	6	14	*1870*	*yd^3*	*$ 15.00*	*$ 28,050.00*	
	Structural Excavation for Pipe Bedding	*Excavation for pipe bedding*	600	6	1	*130*	*yd^3*	*$ 30.00*	*$ 3,900.00*	
	Load & Haul Structural Excavation to Storage Site	*Haul excavated material to off site stockpile*	600	6	1	*130*	*yd^3*	*$ 15.00*	*$ 1,950.00*	
	Dewatering	*Dewatering pump + labor to relocate each day*				*12*	*day*	*$ 1,500.00*	*$ 18,000.00*	
2	Pipe Bedding									$ 18,300.00
	Grading & Compaction of Native Material	*Bucket teeth grading & plate compaction*	600	6		*400*	*yd^2*	*$ 10.00*	*$ 4,000.00*	
	Imported Granular Pipe Bedding	*3/4 minus gravel delivered to project site*	600	6	1	*130*	*yd^3*	*$ 100.00*	*$ 13,000.00*	
	Installation & Compaction of Pipe Bedding	*Installation and compaction of bedding gravel*	600	6	1	*130*	*yd^3*	*$ 10.00*	*$ 1,300.00*	
4	Pipe									$ 134,000.00
	24-in PVC Pipe	*Bell & spigot pipe with rubber gakets*				*600*	*lf*	*$ 160.00*	*$ 96,000.00*	
	Fittings	*Flanges to bolt pipe to Intake and Manhole*				*2*	*ea*	*$ 7,000.00*	*$ 14,000.00*	
	24" Fittings	*Bends*				*3*	*ea*	*$ 3,000.00*	*$ 9,000.00*	
	Installation	*Equipment & Labor to install PVC Pipe*				*1*	*ls*	*$ 15,000.00*	*$ 15,000.00*	
5	Structure Backfill									$ 56,000.00
	Load & Haul Native Material from Storage Site to Pipe	*Assume native material from stockpile*	600	6	12	*1600*	*yd^3*	*$ 25.00*	*$ 40,000.00*	
	Installation, Grading & Compaction of Fill	*Installation, grading & compaction of native material*	600	6	12	*1600*	*yd^3*	*$ 10.00*	*$ 16,000.00*	

Estimated Component Cost $ 317,000.00
(roundup to nearest $1k)

CITY OF MOLALLA, OREGON
MOLALLA RIVER POTABLE WATER INTAKE - TEE SCREENS
Component: Channel and Bank Restoration

Estimate of Probable Cost - 10 Percent Design Level
April 4, 2025

Item	Description	Notes	L	W	D	Qty	Units	Unit Cost	Task Cost	Item Cost
1	Bank Protection - Upstream of Intake Structure									$ 14,000.00
	Imported Rip Rap	*24 to 36 in angular boulders delivered to project site*	*50*	*12*	*3*	*70*	*yd^3*	$ 150.00	*$ 10,500.00*	
	Installation of Rip Rap along Bank U/S of Intake	*Installation of Rip Rap*	*50*	*12*	*3*	*70*	*yd^3*	$ 50.00	*$ 3,500.00*	
2	Bank Protection - Downstream of Intake Structure									$ 14,000.00
	Imported Rip Rap	*24 to 36 in angular boulders delivered to project site*	*50*	*12*	*3*	*70*	*yd^3*	$ 150.00	*$ 10,500.00*	
	Installation of Rip Rap along Bank D/S of Intake	*Installation of Rip Rap*	*50*	*12*	*3*	*70*	*yd^3*	$ 50.00	*$ 3,500.00*	
3	Structure Protection - Along Toe of Screen Apron									$ 2,000.00
	Imported Rip Rap	*24 to 36 in angular boulders delivered to project site*	*20*	*3*	*3*	*10*	*yd^3*	$ 150.00	*$ 1,500.00*	
	Installation of Rip Rap along Front, Back & End of Str	*Installation of Rip Rap*	*20*	*3*	*3*	*10*	*yd^3*	$ 50.00	*$ 500.00*	
4	Channel Protection - Channel Bottom Upstream of Intake									$ 800.00
	Imported Rip Rap	*18 to 24 in river boulders delivered to project site*	*20*	*2*	*3*	*4*	*yd^3*	$ 150.00	*$ 600.00*	
	Installation of Rip Rap on Channel Bottom U/S of Inta	*Installation of Rip Rap*	*20*	*2*	*3*	*4*	*yd^3*	$ 50.00	*$ 200.00*	
5	Channel Protection - Channel Bottom Downstream of Intake									$ 800.00
	Imported Rip Rap	*18 to 24 in river boulders delivered to project site*	*20*	*2*	*3*	*4*	*yd^3*	$ 150.00	*$ 600.00*	
	Installation of Rip Rap on Channel Bottom D/S of Inta	*Installation of Rip Rap*	*20*	*2*	*3*	*4*	*yd^3*	$ 50.00	*$ 200.00*	
6	Revegetation									$ 31,570.00
	Access Road	*Upland Seed Mix on Cut Slopes*	400	20		*890*	*yd^2*	$ 5.00	*$ 4,450.00*	
	Work Areas around Intake & Pump Station	*Upland Seed Mix on Disturbed Areas*	50	50		*280*	*yd^2*	$ 5.00	*$ 1,400.00*	
	Rip Rapped Banks	*Willow Sprigs along Toe*	100	4		*100*	ea	$ 5.00	*$ 500.00*	
		Planting / vegetation allowance				*1*	LS	$ 25,000.00	*$ 25,000.00*	
		Upland Seed Mix along Top	100	4		*44*	*yd^2*	$ 5.00	*$ 220.00*	
7	Grade Control Structures									$ 200,000.00
	Embedded boulder spurs into river bottom	Downstream of Intake to prevent channel erosion				*200*	*LF*	*$ 1,000.00*	*$ 200,000.00*	

Estimated Component Cost $ 264,000.00
(roundup to nearest $1k)

CITY OF MOLALLA, OREGON
MOLALLA RIVER POTABLE WATER INTAKE - TEE SCREENS
Component: Electrical

Estimate of Probable Cost - 10 Percent Design Level
April 4, 2025

Item	Description	Notes	L	W	D	Qty	Units	Unit Cost	Task Cost	Item Cost
1	Electrical Service									$ 50,000.00
	Electric Service to Intake Structure	*Assume new service from existing pump station*				1	ls	$ 50,000.00	*$ 50,000.00*	
2	Electrical Panels & Wiring									$ 40,000.00
	Control Panels for Intake Screens	*Assume Contractor will purchase & install*				1	ls	$ 30,000.00	*$ 30,000.00*	
	Conduit and Wiring to Intake Screens	*Assume Contractor will purchase & install*				1	ls	$ 10,000.00	*$ 10,000.00*	
3	SCADA System Control Panel									$ 40,000.00
	SCADA Control Panel	*Assume Contractor will purchase & install*				1	ls	$ 15,000.00	*$ 15,000.00*	
	Water Level Sensors	*Assume Contractor will purchase & install*				1	ls	$ 10,000.00	*$ 10,000.00*	
	Conduit and Wiring to SCADA System	*Assume Contractor will purchase & install*				1	ls	$ 5,000.00	*$ 5,000.00*	
	Control system programming					1	ls	$ 10,000.00	*$ 10,000.00*	
4	Air Burst System Control Panel									$ 40,000.00
	Air Burst Control Panel	*Assume Contractor will purchase & install*				1	ls	$ 25,000.00	*$ 25,000.00*	
	Water Level Sensors	*Assume Contractor will purchase & install*				1	ls	$ 10,000.00	*$ 10,000.00*	
	Conduit and Wiring to Air Burst Panel	*Assume Contractor will purchase & install*				1	ls	$ 5,000.00	*$ 5,000.00*	
5	*General Contractors Overhead and Profit*	*10 percent mark up of sub-contractors cost*				0.1	ls	##########	*$ 17,000.00*	$ 17,000.00
6										
								Estimated Component Cost		$ 187,000.00

CITY OF MOLALLA, OREGON
MOLALLA RIVER POTABLE WATER INTAKE - TEE SCREENS
Component: Mechanical

Estimate of Probable Cost - 10 Percent Design Level
April 4, 2025

Item	Description	Notes	L	W	D	Qty	Units	Unit Cost	Task Cost	Item Cost
1	Mechanical Building									$ 205,000.00
	CMU Building for Intake Mechanical Components	*Assume 20x20 CMU building w/double doors*	20	20		*400*	*ft²*	*$ 350.00*	*$ 140,000.00*	
	Building site grading					1	LS	*$ 2,000.00*	*$ 2,000.00*	
	Concrete elevated base		80	1	8	24	cy	*$ 2,000.00*	*$ 48,000.00*	
	Stairs and guard rails					1	LS	*$ 15,000.00*	*$ 15,000.00*	
2	Air Compressors									$ 42,000.00
	Two stage air compressors	*Compressors w/ 10 hp motors*				*2*	*ea*	*$ 16,000.00*	*$ 32,000.00*	
	Install	*Piping, valves, accessories, drier, filters, etc.*				*2*	*ea*	*$ 5,000.00*	*$ 10,000.00*	
3	Storage Tanks									$ 10,000.00
	Vertical Storage Tanks	*Two hundred gallon tanks*				*2*	*ea*	*$ 5,000.00*	*$ 10,000.00*	
	Install								$32,000	
4	Piping									$ 61,000.00
	Mechanical Building Piping	*Piping to Connect Compressors and Storage Tanks*				*1*	*ls*	*$ 5,000.00*	*$ 5,000.00*	
	~~*Piping to Intake Structure*~~	~~*Piping to Connect Mechanical Building to Intake Structure*~~				~~*300*~~	~~*LF*~~	~~*$ 80.00*~~	~~*$ 24,000.00*~~	
	~~*Intake Structure Piping*~~	~~*Piping to Connect Supply Piping to Manifolds*~~				~~*1*~~	~~*ls*~~	~~*$ 5,000.00*~~	~~*$ 5,000.00*~~	
	Control valves	*In building*				*2*	*ea*	*$ 3,000.00*	*$ 6,000.00*	
	Piping to Existing Intake Structure	*Piping to Connect Mechanical Building to Intake Structure*				200	LF	*$ 80.00*	*$ 16,000.00*	
	Existing Intake Structure Piping Connection	*Piping to Connect Supply Piping to Existing Screens*				*1*	*ls*	*$ 5,000.00*	*$ 5,000.00*	
5	New Intake Pump									$ 190,000.00
	Pump					1	LS	*$ 100,000.00*	*$ 100,000.00*	
	Pump Install					1	LS	*$ 30,000.00*	*$ 30,000.00*	
	Piping & Valves					1	LS	$ 30,000.00	*$ 30,000.00*	
	Electrical / Controls Upgrades					1	LS	$ 30,000.00	*$ 30,000.00*	
6	*General Contractors Overhead and Profit*	*10 percent mark up of sub-contractors cost*				0.1	ls	$ 261,000.00	*$ 26,100.00*	$ 26,100.00

$232,000

$23,200

$502,000

Estimated Component Cost $ 535,000.00
(roundup to nearest $1k)

CITY OF MOLALLA

Staff Report

Agenda Category: GENERAL BUSINESS

Agenda Date: Wednesday, July 23, 2025
Submitted by: Scott Keyser, Mayor
Approved by: Dan Huff, City Manager

SUBJECT: Future City Council Meetings

Comments Submitted At the 3/26/2025 Hearing For ORD2025-05

PUBLIC COMMENT
SIGN-IN CARD

We welcome your comments.
City Council has set aside a time on the agenda called "PUBLIC COMMENT" for anyone who wishes to discuss a topic of concern on the Agenda. If you would like to talk to the City Council, please fill out this card and give it to the City Recorder no later than 6:55pm.
Thank you!

NAME: (Please Print)
LYLE STRATTON

ADDRESS: (Include house number, street, city)
1316 NE 99TH ST. VANCOUVER WA.

PHONE: 520.909.4424 98665

EMAIL ADRESS: (Please print clearly)
LYLE@LYLESTRATTON.COM

Choose one:

☐ I wish to speak during Public Comment. My topic is not on the current Agenda.

Your topic: 7 B A 6 A

☐ I wish to speak on an item on the current Agenda. Item # 7 B A

RULES FOR PUBLIC COMMENT:

- Public comment has a time limit of 3 minutes as set by the Council.
- If written documentation is presented, please furnish at least one copy to the City Recorder.
- No comment shall contain profane, obscene, abusive, threatening, or slanderous content.

Oregon
Tina Kotek, Governor

Department of Transportation
Transportation Region 1
123 NW Flanders St.
Portland, OR 97209-4012
(503) 731-8200
Fax: (503) 731-8259

March 26, 2025

Molalla City Council
117 N Molalla Avenue
Molalla, OR 97038

RE: City of Molalla March 26, 2025 Council Ordinance: City File DCA01-2025/ORD2025-05 Efficiency Measures; Changing Accessory Dwelling Unit Approvals From A Type II To A Type I Process and Comprehensive Plan Map and Zoning Map Changes.

City Councilors,

Please accept this letter from the Oregon Department of Transportation (ODOT) into the public record for the proposed ordinance: *DCA01-2025/ORD2025-05 Efficiency Measures; Changing Accessory Dwelling Unit Approvals From A Type II To A Type I Process and Comprehensive Plan Map and Zoning Map Changes.* ODOT has the following three areas of concern:

- Agency Notification
  Oregon's Transportation Planning Rule (TPR) requires local governments outside metropolitan areas to adopt regulations that include providing required notice to ODOT and other parties in OAR 660-012-0045(2)(f). ODOT's planning team relies on local agency partners notification for proposed changes to land use or zoning to ensure compatibility with the State's current and planned highway network. ODOT staff learned about this proposal on March 19, 2025 from another agency. ODOT does not have a record of receiving this notification from the City. This is a procedural error and limits ODOT's ability to thoughtfully review proposals and work with the City of Molalla to help shape plans that are consistent with the Oregon Transportation Plan and its modal Highway Plan.

- Significant Effects
  As noted in the staff report: the TPR, OAR 660-12-0060(1) directs cities and counties to review proposed plan changes to see if they would significantly affect an existing or planned transportation facility. The City's response to this requirement lacks sufficient detail to support the claim that the proposed changes would not have any significant effects for which mitigations may be required.

  As an example, the ordinance proposes converting three industrially zoned taxlots along Hwy 213 at the new roundabout at S Toliver Rd from Industrial to G-2 General Commercial. The higher intensity commercial and retail uses allowed by the proposed G-2 zoning could impact highway safety and operations for the traveling public.

Oregon
Tina Kotek, Governor

Department of Transportation
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Accordingly, the City has not adequately addressed the requirements of OAR 660-12-0060. ODOT recommends the City provide further evidence (traffic analysis) to support the claim and evaluate the effect of zone changes on the transportation network to determine whether mitigations would be needed. At this time, ODOT cannot conclude that the planned transportation network can accommodate the proposed zoning changes and therefore object to the ordinance moving forward without accurate findings.

- Access Management
  OAR 734-51 directs ODOT on management of access to and from public highways. Similarly, the City of Molalla's Code 17-3.3.030(D)1 states: *The number of approaches on higher classification streets (e.g. collector and arterial streets) shall be minimized; where practicable, access shall be take first from a lower classification street.*
  ODOT appreciates that this provision would help preserve the regional function of the highway system and would like affirmation from the City that future development on ODOT facilities will take access from lower classification local streets and would aim to use existing access points as well work to consolidate access on Hwy 211 and 213.

ODOT advises that the City Council action on this ordinance be postponed to a future meeting to allow City staff time to properly notice and document findings. If the action moves forward, ODOT recommends that City staff document the transportation impacts findings and provide materials for review within 2 weeks of the action to allow for review and the opportunity to appeal the decision. ODOT looks forward to partnering with the City of Molalla to document findings and work to provide safe and efficient transportation.

Sincerely,

Neelam Dorman

Neelam Dorman, PE, TE
Region 1 Planning Manager
Oregon Department of Transportation
123 NW Flanders Street
Portland, OR 97209

cc: Rian Windsheimer, Region 1 Manager, ODOT
Chris Ford, Policy & Development Manager, ODOT
Paul Scarlett, Area Manager, ODOT
Glen Bolen AICP, Principal Planner, ODOT
Kelly Reid, Regional Representative, DLCD

Comments Submitted At the 6/25/2025 or 7/23/2025 Repeal and Replace Hearings For ORD2025-07

Oregon
Tina Kotek, Governor

Department of Transportation
Transportation Region 1
123 NW Flanders St.
Portland, OR 97209-4012
(503) 731-8200
Fax: (503) 731-8259

June 13, 2025

Molalla City Council
117 N Molalla Avenue
Molalla, OR 97038

RE: City of Molalla June 25, 2025 Council Meeting item to Repeal ORD2025-05 and replace with ORD2025-07 to change zoning and comprehensive plan designations for multiple properties

City Councilors,

Please accept this letter from the Oregon Department of Transportation (ODOT) regarding the repeal of ORD2025-05 and proposed ORD2025-07. ODOT appreciates the continued collaboration with City of Molalla staff to determine transportation findings for the proposed zone changes as shown in the Notice of Public Hearing - ORD2025-07 - Efficiency Measures Repeal and Replace. We support the staff recommendation to repeal ORD2025-05 and the Transportation Planning Rule findings for the proposed zones changes (two parcels at S Lowe Road and S Molalla Forest Road, two parcels on Shaver Avenue, 0.68 acre parcel near OR-211/OR-213, and the courtesy rezoning for the Prairie House Inn and Colima and Cascade Place Apartments). ODOT looks forward to continued partnership with the City of Molalla to provide safe and efficient transportation.

Sincerely,

Neelam Dorman

Neelam Dorman, PE, TE
Region 1 Planning Manager
Oregon Department of Transportation
123 NW Flanders Street
Portland, OR 97209

cc: Rian Windsheimer, Region 1 Manager, ODOT
Chris Ford, Policy & Development Manager, ODOT
Paul Scarlett, Area Manager, ODOT
Glen Bolen, AICP, Principal Planner, ODOT

From: Christie Teets
To: Dan Huff
Cc: Christie Teets
Subject: FW: Molalla Efficiency Measures, ORD 2025-07 - corrected with footnotes
Date: Tuesday, June 24, 2025 1:46:50 PM
Attachments: IU06dmvYDjN1RILI.png
Molalla Efficiency Measures testimony w_footnotes.pdf

Mayor & Council,

Please see the public comment submitted below regarding Ordinance No. 2025-07, Efficiency Measures.

This message will also be included in the final packet.

Best,

Christie Teets, CMC
City Recorder
City of Molalla | 117 N. Molalla Ave. | Molalla, OR 97038
Phone: 503.759.0285
www.cityofmolalla.com

From: Mary Kyle McCurdy <mkm@friends.org>
Sent: Monday, June 23, 2025 11:17 AM
To: City Recorder <recorder@cityofmolalla.com>; Community Planner <communityplanner@cityofmolalla.com>; Dan Zinder <dzinder@cityofmolalla.com>
Cc: Kelly.REID@dlcd.oregon.gov; Robb Wolfson <robb@friends.org>; Mary Kyle McCurdy <mkm@friends.org>
Subject: Re: Molalla Efficiency Measures, ORD 2025-07 - corrected with footnotes

Attached pleased find the correct version of our testimony - the footnotes that were missing in the version we sent earlier and are included here. Thank you.

Mary Kyle McCurdy

To: Molalla City Council

c/o: City Recorder, Christie Teets

Planning Support Specialist, Jessica Wirth

Dan Zinder, Senior Planner

Attached please find the testimony of 1000 Friends of Oregon on the city of Molalla's proposed ORD2025-07, regarding efficiency measures, which is scheduled to be before the Molalla City Council on June 25, 2025. Please include these in the record, and include 1000 Friends on the mailing list for this and related items. Thank you.

Mary Kyle McCurdy
Associate Director
Pronouns: she/her
1000 Friends of Oregon
503.497.1000 x130

1000 Friends of Oregon
340 SE 6th Ave, Portland, OR 97214
www.friends.org
503-497-1000

June 23, 2025

To: Molalla City Council

From: 1000 Friends of Oregon
Mary Kyle McCurdy, Associate Director and Robb Wolfson, Legal Apprentice

Subject: Proposed Efficiency Measures Ordinance, ORD2025-07

Following are the comments of 1000 Friends of Oregon on the city of Molalla's proposed efficiency measures to address needed housing capacity inside its urban growth boundary (UGB). While we support the proposed actions as good first steps, for the reasons stated below, we find they are not sufficient to meet the legal requirements under Goal 14 and related statutes and administrative rules.

As required by law, Molalla inventoried the land inside its UGB to determine whether adequate development capacity exists to accommodate its current and projected needs, including on vacant and redevelopable land. The City conducted a Housing Needs Analysis (HNA) and Housing Production Strategy (HPS), and proposes Ordinance 2025-07, with its accompanying Findings of Fact.

Prior to expanding its Urban Growth Boundary (UGB), the City is required by Goal 14 and related statutes, including ORS 197A.210(2), to meet the urban efficiency standards described in ORS 197A.100(3) and OAR 660-024-0050. These standards require the City to demonstrate that it has enacted efficiency measures reasonably likely to accommodate its residential housing needs over the next 20 years on land already inside its UGB. The City's proposed efficiency measures are not adequate to meet these legal requirements.

1. The City's proposed ordinance to make Alternative Dwelling Unit (ADU) approvals a Type I Review Process is a good first step, but the City must analyze how this proposed action will contribute to land efficiency and the city's housing needs over the next 20 years to comply with the state's urban efficiency requirements.

Under ORS 197A.425, Molalla is required to allow at least one ADU for each detached single-family dwelling, subject to reasonable local regulations relating to siting and design. The City's action to change ADU approvals to a ministerial Type I Review Process is consistent with state requirements already in place. 1000 Friends supports this change; it will make the City's ADU permitting process more efficient and less expensive for homeowners.

Despite this positive change, the City has not met the urban efficiency standards outlined under ORS 197A.210(2), 197A.100(3), and OAR 660-024-0050. Importantly, it is questionable this meets the efficiency measure requirement, given that the City was already required by statute to allow ADUs on land zoned to allow single detached dwellings.

Assuming it could be an efficiency measure, the City must demonstrate how this action is reasonably likely to increase land efficiency and accommodate some part of the City's housing need on land already inside its UGB. The City must provide an analysis of the current amount of ADUs, the remaining amount of properties that are eligible to build ADUs, a reasonable estimate of the total amount of ADUs likely to be constructed over the next 20 years resulting from this proposed action, and the impact this would have on the City's housing needs (both in terms of the amount of people and income categories that might be served).

Neither the City's HNA[1] nor its HPS[2] provided this analysis. In the proposed ordinance the City noted that ADUs "could account for some of the gap in available housing for 80% of the AMI,"[3] but provided no further information. Without this analysis, it isn't possible for the City to determine how the proposed action to make ADUs a Type I review process will increase residential land efficiency and contribute to meeting the City's housing needs within its UGB.

In addition, if the City plans to rely on increased construction of ADUs to demonstrate compliance with the land efficiency requirement and to meet some part of its housing need, it should adopt actions beyond this procedural change. We recommend these additional actions the City should take to increase the likelihood that additional ADUs will be constructed, and therefore contribute to the City complying with the urban efficiency standards and meeting some of its housing need:

- Accelerate its plan to reduce system development charges (SDCs) for ADUs. The HPS determined that reducing SDCs could have a moderate impact on ADU production.[4] However, the City's implementation timeline shows it will evaluate SDCs for five years prior to implementation in 2032.[5] Accelerating this would allow the City to experience this moderate impact much sooner.
- Create and distribute to homeowners a guide that includes pre-approved plan sets for ADUs. Molalla could easily adapt its guide from ones already publicly distributed, such as Oregon City's guide or the AARP's model ordinance standards for ADUs. Other detailed sources for information about ADUs include: Innovative Ways to Develop ADUs that Intentionally Help Your Community and ADUs in Oregon: How to Increase Your Property's Value and Functionality.

2. The City's ordinance to upzone vacant and underdeveloped industrial properties for residential and commercial uses is a good first step. However, to comply with the state's

[1] City of Molalla 2022-2042 Housing Needs Analysis, Buildable Lands Inventory. Adopted by Ordinance 2023-07 on July 26, 2023.
[2] Molalla Housing Production Strategy. Adopted by Resolution 2025-05 on March 19, 2025.
[3] Exhibit A: Findings of Fact for ORD 2025-05. March 26, 2025. p.4.
[4] Molalla Housing Production Strategy. Adopted by Resolution 2025-05 on March 19, 2025. p.15.
[5] Molalla HPS, p.31.

urban efficiency requirements, the City must analyze how the upzoning will impact its housing needs over the next 20 years, and consider zoning these lands for higher residential densities.

Under OAR 660-024-0050(1), the City must inventory land inside its UGB to determine whether there is adequate development capacity to accommodate its different needs over the 20 year planning period. The City did this and determined that almost 71 acres of vacant or underutilized industrial land could be re-zoned to the following classifications:[6]

- R-1 Low Density Residential Acres: 11.35 acres gained
- R-2 Medium Density Residential Acres: 27.07 acres gained
- R-3 Medium-High Density Residential Acres: 7.15 acres
- C-2 General Commercial Acres: 19.15 acres gained
- C-1 Central Commercial Acres: 2.95 acres gained

Rezoning underutilized land from one category to other more appropriate categories to meet a city's needs is an important land efficiency action. However, some of the City's proposed rezonings are insufficient to show that the city will be efficiently using land within the existing UGB prior to expanding it.

First, the City proposes to rezone over 22 acres of industrial land to commercial use. However, the City's Economic Opportunities Analysis shows it has a deficit of only 15 acres of commercial land.[7] The City should explain why the seven additional acres are being rezoned to commercial rather than to residential use or a mixed commercial/residential zone.

Second, the City has not estimated to what degree its proposed upzonings are reasonably likely to result in more efficient land use by increasing residential development to meet some or all of the city's housing needs over the next 20 years.

Third, the City's HNA concludes that over the 2022-2042 planning period, "future demand anticipates a greater share of medium and high-density housing compared to the current inventory."[8] Given this conclusion, the City's proposal to rezone some surplus industrial land for low density residential use does not represent an efficiency measure that will meet the city's housing needs.

Other evidence also demonstrates the City's need for high-density housing. The HNA projected a need for 1,098 low density units, 499 medium density units, and 399 high density units over the 20-year planning period.[9] The City then noted that 287 multifamily units in the R-3 zone have already been completed since 2022.[10] Rather than seeing this as an indicator of the demand for R-3 multifamily housing and designating more land accordingly, the City stated that since the multi-unit target was nearly complete, its future emphasis will be on zoning land R-1 and R-2 for lower density housing, including through a UGB expansion.[11]

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[6] City of Molalla Staff Report, City File DCA01-2025/ORD2025-05 Efficiency Measures. March 26, 2025. p.3.
[7] Exhibit A: Findings of Fact for ORD 2025-05. March 26, 2025. p.3.
[8] Ibid.
[9] Ibid., p.4
[10] Ibid.
[11] Ibid.

The increasing need and desire for multifamily and duplex housing in the City has a longer trend, too. According to the HNA, between 2011-2017, "70% of the residential development permits proposed multifamily or duplex housing."[12] These trends indicate that planning for only 45% of total housing for duplexes and multifamily housing[13] is significantly lower than the actual need, and is insufficient to meet the requirement for adopting reasonable efficiency measures prior to a potential UGB expansion.

Similar to section 1, the City has not met the urban efficiency standards[14] when evaluating the upzoning of its vacant and underutilized industrial land. The City must provide a reasonable estimate of the total amount of housing likely to be constructed on these lands over the next 20 years and analyze the impact on its housing needs (both in the amount of people and income categories that might be served). Without this, it isn't possible for the City to determine how constructing housing on this land can more efficiently meet its residential needs within its UGB and minimize expansion.

3. The City's parking requirement for duplex housing must be modified to comply with state law.

OAR 660-046-0120(5)(a) prohibits the City from requiring more than a total of two off-street parking spaces for a duplex. However, the City currently has a minimum requirement of three off-street parking spaces for a duplex.[15] The City must conform its parking code to state law, and make an assessment of the degree to which this will result in a more efficient use of land and help meet the City's housing needs. For example, requiring excess offstreet parking, especially for a duplex, can result in a lot being unable to accommodate the duplex at all.

4. High-impact efficiency measures the City should evaluate and adopt to comply with the urban efficiency standards required by statute and rule.

Based on the housing needs documented by the HNA[16] and the evidence of strong demand for medium and higher density housing, the City should take additional measures to ensure that land inside the UGB is being used efficiently prior to a potential expansion. The following moderate to high impact measures, most of which are already proposed in the City's HPS, should be implemented expeditiously:

- Upzone more residential land for R-3 development.

- Raise the minimum density standards in its R-3 and R-5 zones to more fully utilize their capacity. Currently, land zoned R-3 and R-5 can be developed at 8-24 units and 6-24

[12] City of Molalla 2022-2042 Housing Needs Analysis, p.19.
[13] Ibid., p.21.
[14] OAR 660-024-0050
[15] City of Molalla, Title 17 Development Code, Molalla Development Code Title 17, Table 17-3.5.030.A Automobile Parking Spaces by Use. p.100.
[16] Molalla Housing Production Strategy. Adopted by Resolution 2025-05 on March 19, 2025. p.3-4.

units per acre, respectively. These are large spreads, and means properties within these classifications could be developed at only 25%-33% of their potential capacity. Similar cities have set higher minimum standards for their high-density or multi-family dwelling zoning classifications:

- Stayton=13 units[17]
- McMinnville=14 units[18]
- Canby=14 units[19]
- Estacada=15 units[20]
- Woodburn=19 units[21]

- Accelerate adopting cottage cluster standards sooner than 2030.

- Update the development code to define a small dwelling unit as less than 2000 square feet and allow their construction on smaller lots than currently permitted.

- Accelerate adopting a sliding SDC fee schedule based on dwelling size sooner than 2031.

- Defer collecting residential SDCs until the certificate of occupancy is issued.

- Implement a Construction Excise Tax to fund developer incentives and other programs that support the development of high-density housing within the City's Urban Renewal Area.

5. Molalla should base its housing, land, and UGB needs on the most accurate and recent population and housing projections.

Because the City began its HNA in 2022, it used the population forecast available at that time from the Portland State University Population Research Center (PSU). This forecast, from 2020, projected a population increase of 5,432 people by 2042. However, PSU's most recent forecast, from 2024, significantly revised that projection downward. This more accurate forecast projects population growth of approximately 3000 persons by 2042, a decrease of almost 50%.[22]

The Oregon Housing Needs Analysis (OHNA) housing allocations came out in December 2024 and are based on PSU's 2024 population forecast.[23] The City concluded it has a 20-year housing deficit of 1,576 units, based on the outdated population forecast.[24] However, based on the

[17] City of Stayton Chapter 17.16 Zoning. p.16-8.
[18] City of McMinnville Title 17 Zoning, Section 17.22.005. p.145.
[19] City of Canby, Zoning/Development Code, Section 16.20.030(A).
[20] City of Estacada Municipal Code, Chapters 16.24 and 16.60.70
[21] Woodburn Development Ordinance, Section 2.02, Nodal Medium Density Residential p.61.
[22] See, e.g., PSU's population projections for UGBs in Clackamas County. PSU's reduced projection is understandable, given the challenges to conduct the census during Covid and the changes to population patterns post-Covid.
[23] Dept of Administrative Services, Oregon Housing Needs Analysis Methodology, Dec. 2024.
[24] Exhibit A: Findings of Fact for ORD 2025-05. March 26, 2025. p.3.

OHNA report, the state's official projection of total housing need for Mollala over the next 20 years is 1,152 units,[25] a significant reduction.
The City can and should use the most recent PSU population forecast and OHNA housing need allocation, for the following reasons:

- Correlating the City's most updated and accurate population growth projection with its projected housing needs is the most important efficiency measure the City can and should take; it would result in a more efficient use of the City's existing land supply.

- The City is surrounded by some of the most productive farm land in the state, and consuming it needlessly would adversely impact the area's agricultural industry.

- Relying on more accurate population and housing projections does not mean the City needs to undo or significantly revise any of its work to date. The efficiency measures the City proposes in its HPS are still worthwhile to meet the diverse housing needs of its current and future residents.

- It is an inefficient use of land, infrastructure, and scarce public funds (e.g., for construction and maintenance of road, sewer, water systems) to expand the UGB to include land the city will not need to accommodate growth.

[25] OHNA Methodology Report, p. 55.

From: Christie Teets
To: James Bobst; City Recorder
Cc: Dan Zinder
Subject: RE: COMMENTS FOR PUBLIC HEARING: ORD2025-07
Date: Wednesday, June 25, 2025 4:05:25 PM

Mr. Bobst,

I am in receipt of your Public Comment. I will share this with City Council at this evening's meeting, which will also become public record.

Kind Regards,

Christie Teets, CMC
City Recorder
City of Molalla | 117 N. Molalla Ave. | Molalla, OR 97038
Phone: 503.759.0285
www.cityofmolalla.com

From: James Bobst <jbobst@pacfibre.com>
Sent: Wednesday, June 25, 2025 3:45 PM
To: City Recorder <recorder@cityofmolalla.com>
Cc: Dan Zinder <dzinder@cityofmolalla.com>; James Bobst <jbobst@pacfibre.com>
Subject: COMMENTS FOR PUBLIC HEARING: ORD2025-07
Importance: High

City Recorder:

Please accept and consider the following comments regarding Ordinance ORD2025-07.

I represent Pacific Fibre Products, Inc., which operates a heavy industrial business on property appropriately zoned for such use in Molalla. Our bark yard production facility is located at 300 Shaver Avenue, directly across the street from the area identified in Exhibit A of ORD2025-07, which proposes Comprehensive Plan Map and Zone Changes. Specifically, this ordinance seeks to rezone property currently designated as Commercial or Industrial to R-2 Medium-High Density Residential (please see attached reference).

Additionally, we operate a log yard and whole-log chipping operation at 410 Section Street. Both of these contiguous sites are owned by Pacific Fibre Products and are located immediately adjacent to the proposed rezoning area.

We strongly oppose this zoning change.

Pacific Fibre Products, together with Lemmons Trucking (PFP & LTI), has been a committed and responsible member of the Molalla business community since the inception of our

operations in 2015. We take great pride in operating responsibly and being good neighbors. Historically, prior to the start of our operations, Avison and Floragon operated the same sites as PFP for decades as Heavy Industrial log yard and sawmill operations. However, introducing medium- to high-density residential zoning directly adjacent to our heavy industrial operations would create an inherent and foreseeable conflict. Industrial operations inherently involve conditions that are not compatible with residential living—such as the mixing of heavy truck traffic with residential vehicle traffic, extended operational hours, and the generation of noise and other impacts. Approving this rezoning will significantly increase the likelihood of future complaints and conflicts from new residents, despite our ongoing compliance with industrial zoning regulations and our long-standing presence in the area.

While we recognize and support the City's efforts to address the growing need for residential housing, we urge decision-makers to consider more suitable alternatives—such as annexing land on the outskirts of town that is better suited for residential development. Rezoning established industrial or commercial property adjacent to active heavy industrial operations is not a sound planning strategy.

Even Molalla's Municipal Code reinforces this principle. The Heavy Industrial district is specifically intended to accommodate intense industrial uses, including processing, manufacturing, assembly, packaging, and distribution activities. This is consistent with the definition provided in Section 17-5.1.010 of the Code for "Manufacturing and Production" land use, which includes, in part: "Manufacturing and production firms are involved in the manufacturing, processing, fabrication, packaging, or assembly of goods. Examples include… lumber mills, and other wood products manufacturing."

If the City chooses to proceed with the proposed rezoning despite our strong opposition, we respectfully request that a legally binding, signed, notarized, and recorded acknowledgment of adjacent industrial uses be required. Specifically, developers, property owners, and all tenants —both initial and subsequent—should be required to acknowledge in writing that the subject residential property is located directly across from active, heavy industrial operations. This acknowledgment should be recorded via a deed restriction, covenant, or remonstrance agreement and must be executed prior to any development approvals or residential occupancy.

We urge the City to carefully consider the long-term implications of this rezoning and to uphold the important planning principle of maintaining clear and appropriate separation between industrial and residential land uses.

Thank you for your time and thoughtful consideration.

Sincerely,

James Bobst
Vice President - Corporate Relations
Pacific Fibre Products, Inc.
Lemmons Trucking, Inc.
PO Box 278 / 20 Fibre Way
Longview, WA 98632
O) 360-577-7112; C) 360-430-0749; F) 360-577-1362

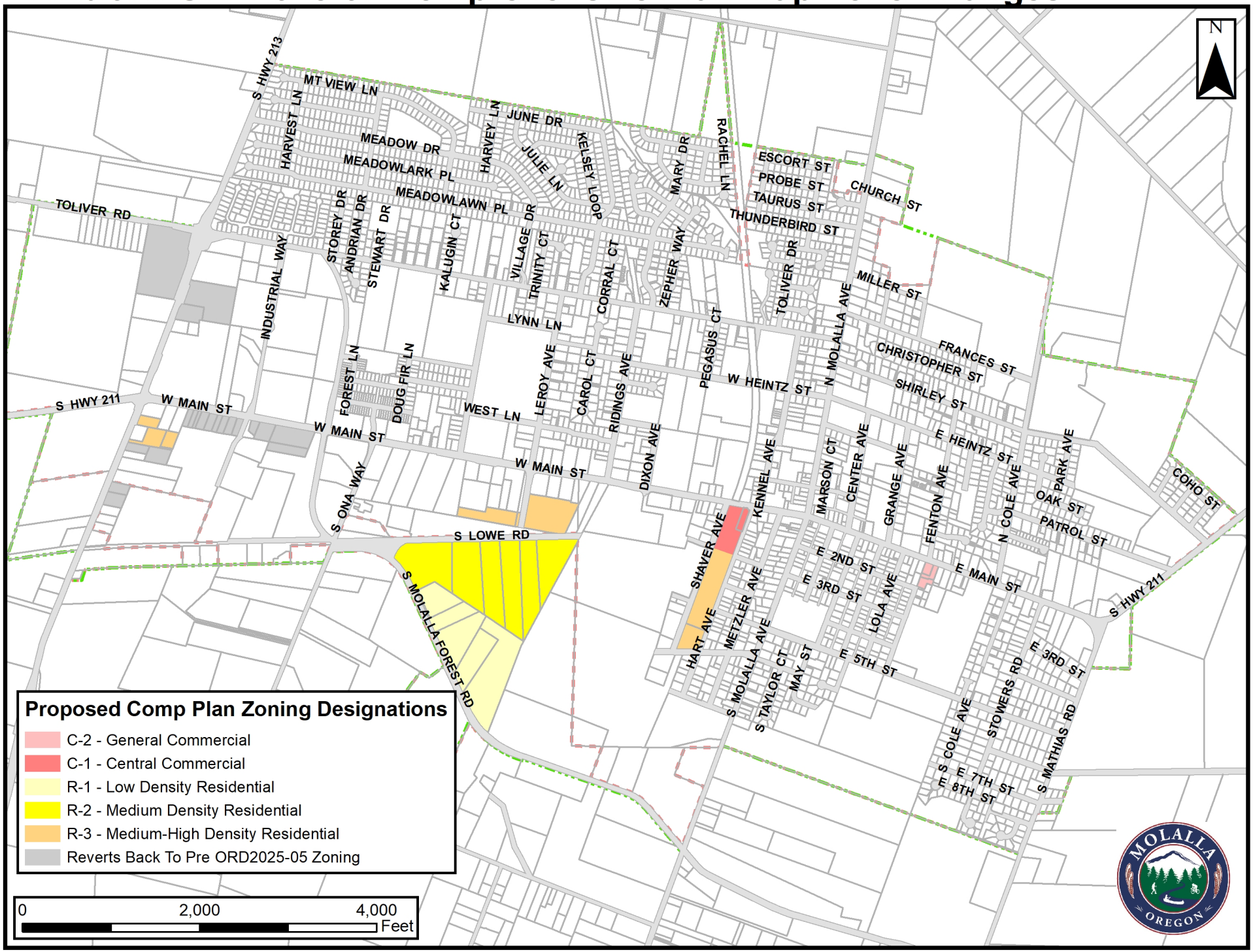
NOTICE OF PUBLIC HEARING: ORD2025-07

On Wednesday, June 25th at 7PM City Council will consider an ordinance to change zoning and comprehensive plan designations for multiple properties in the City and change the review process for Accessory Dwelling Units from a Type II process to a Type I process. The ordinance repeals ORD2025-05 and replaces it with a new ordinance. This effort is in accordance with ORS 197.296, which requires jurisdictions to more efficiently utilize lands within their urban growth boundary before expanding.

The hearing will be held starting at 7:00 PM at the Molalla Civic Center; 315 Kennel Ave, Molalla OR, 97038. You may attend, offer testimony, or seek information at the hearing. Written testimony will be received by the City of Molalla until the day of the hearing and should be addressed or emailed to: City Recorder, Christie Teets, PO Box 248, Molalla OR, 97038, recorder@cityofmolalla.com; note that email is preferred. Please ensure your name and address are included in the written testimony.

A copy of the draft ordinances, resolution, and staff report will be available for inspection at no cost at least seven (7) days prior to the hearing. The documents will also be available at the Molalla Current Urban Growth Boundary page (https://current.cityofmolalla.com/). Copies shall be provided at a reasonable cost upon request.

Exhibit A: ORD2025-07 Comprehensive Plan Map Zone Changes



Oregon
Tina Kotek, Governor

Department of Land Conservation and Development
635 Capitol Street NE, Suite 150
Salem, Oregon 97301-2540
Phone: 503-373-0050
Fax: 503-378-5518
www.oregon.gov/LCD

March 25, 2025

Dan Zinder
City of Molalla
117 N. Molalla Ave
Molalla, Oregon 97038
By email: dzinder@cityofmolalla.com

RE: City of Molalla proposed plan amendment DCA01-2025

Dear Mr. Zinder,

Please add the following comments to the record for Local File DCA01-2025, on behalf of the Department of Land Conservation and Development (DLCD).

Thank you for submission of the plan amendment notice to DLCD. The proposed amendment would change the comprehensive plan land use designations and zoning map for approximately 76 acres on over 40 properties in Molalla's urban growth boundary. We have reviewed the amendment and the findings of fact in the staff report and would like to make note of the following:

The original post-acknowledgement plan amendment notice that the city submitted to DLCD on February 20, 2025 did not include sufficient information about the proposal, including the current and proposed land use and zoning designations for the properties that are the subject of the amendment. After you submitted the updated information on March 13 and March 14, including the current and proposed land use designations and zoning designations, acreages, and maps, we considered the description to be adequate and we issued another notification of proposed amendment with the updated information. Due to the limited available time to review the materials, we advise the city to allow for additional time for review and consideration of the amendments if interested parties indicate to the city that they have not had adequate time to review prior to the March 26th hearing.[1]

The changes in the city's proposed amendment would result in an overall deficit of industrial land to meet the 20-year need established in the city's recently adopted Economic Opportunities Analysis. As you note in your findings, this amendment is one of a few steps in the Sequential Urban Growth Boundary amendment process, with the final step being an amendment to the urban growth boundary. We understand the City's intent is to add land to the urban growth boundary for industrial purposes as part of the amendment, making up for the deficit created by the current proposal, and we support this approach.

[1] ORS 197.620 provides that a local government may cure the untimely submission of materials by either postponing the date for the final evidentiary hearing by the greater of 10 days or the number of days by which the submission was late; or by holding the evidentiary record open for an additional period of time equal to 10 days or the number of days by which the submission was late, whichever is greater.

The staff report includes findings for some of the City's Comprehensive Plan policies, but the city has not included findings for consistency with the Public Facilities element of the Comprehensive Plan.[2] The findings of fact in the staff report also leave out Statewide Planning Goal 11, Public Facilities. Without findings or evidence in the record, it is not clear whether these amendments to the comprehensive plan and zoning map are consistent with the size and location of planned infrastructure, such as waterline extensions, wastewater line extensions, and pump stations.

We also note a lack of explanation or evidence to support the city's findings for MMC 17-4.6.030 Annexation & Zone Change Approval Criteria, subsection (D), which states "The amendment must conform to Section 17-4.6.050 Transportation Planning Rule." The city's findings state:

> "Molalla's Transportation Systems Plan has already considered the proposed areas as urbanized and none of the proposed changes to the comprehensive plan map or zoning map meet the "significance" thresholds of (OAR) 660-012-0060. Staff determines that no significant impact on the City's transportation systems will result from the proposed ordinance and that no further analysis is required. This criterion is met."

We advise the city to include an explanation that demonstrates how and why the proposed map changes fall below the "significance threshold" in the cited administrative rule.

While we do point out deficiencies in the city's findings, DLCD does not object to the nature of the changes proposed by this amendment. Please feel free to contact me at (971) 345-1987 kelly.reid@dlcd.oregon.gov if you have any questions.

Sincerely,

Kelly Reid

Kelly Reid, AICP
Regional Representative
DLCD

cc: Leigh McIlvaine, DLCD Employment Land specialist
Kevin Young, DLCD Goal 14 specialist
Gordon Howard, DLCD Community Services Division Manager

[2] There is no statute, statewide planning goal or administrative rule that generally requires that legislative land use decisions be supported by findings. *Port of St. Helens v. City of Scappoose*, 58 Or LUBA 122, 132 (2008). However, there are instances where the applicable statutes, rules or ordinances require findings to show compliance with applicable criteria. In addition, where a statute, rule or ordinance requires a local government to consider certain things in making a decision or to base its decision on an analysis, "there must be enough in the way of findings or accessible material in the record of the legislative act to show that applicable criteria were applied and that required considerations were indeed considered." *Citizens Against Irresponsible Growth v. Metro*, 179 Or App 12, 16 n 6, 38 P3d 956 (2002). Such findings serve the additional purpose of assuring that the director does not substitute her judgment for that of the local government. Id.; *Naumes Properties, LLC v. City of Central Point*, 46 Or LUBA 304, 314 (2004).

PUBLIC COMMENT
SIGN-IN CARD

We welcome your comments.
City Council has set aside a time on the agenda called "PUBLIC COMMENT" for anyone who wishes to discuss a topic of concern on the Agenda. If you would like to talk to the City Council, please fill out this card and give it to the City Recorder no later than 6:55pm.
Thank you!

NAME: (Please Print)
Teri Larsen
Bob Axmaker.

ADDRESS: (Include house number, street, city)
13353 S. Molalla Forest Rd.

PHONE: 829-5222

EMAIL ADRESS: (Please print clearly)

Choose one:

☐ I wish to speak during Public Comment. My topic is not on the current Agenda.

Your topic: _____

☑ I wish to speak on an item on the current Agenda. Item # 7A.

RULES FOR PUBLIC COMMENT:

- Public comment has a time limit of 3 minutes as set by the Council.
- If written documentation is presented, please furnish at least one copy to the City Recorder.
- No comment shall contain profane, obscene, abusive, threatening, or slanderous content.