



Engineering | Planning | Management

Tumwater Blvd Townhome Condos

715 Dennis Street SE
Tumwater, WA 98501

STORMWATER SITE PLAN

PREPARED FOR:
TODD HANSEN
TENINO LAND COMPANY, LLC

PREPARED BY



Engineering | Planning | Management

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PROJECT ENGINEER'S CERTIFICATION

"I hereby state that this Drainage and Erosion Control Plan/Construction SWPPP for the Tumwater Blvd Townhome Condos project has been prepared by me or under my supervision and meets the requirements of the City of Tumwater Drainage Design and Erosion Control Manual and the standard of care and expertise which is usual and customary in this community for professional engineers. I understand that the City of Tumwater does not and will not assume liability for the sufficiency, suitability, or performance of drainage facilities prepared by me."



5/16/2025

Whitney Dunlap, PE

Date

STORMWATER SITE PLAN

The following report was prepared for the proposed Tumwater Blvd Townhome Condos Project. This project was prepared to comply with the minimum technical standards and requirements that are set forth in the 2022 *City of Tumwater Drainage Design and Erosion Control Manual (DDECM)*.

SECTION 1: PROPOSED PROJECT DESCRIPTION

This report has been prepared to document the drainage design for the proposed Tumwater Blvd Townhome Condos for preliminary drainage. The project proposes to include 6 condo buildings (4 units each), curb/gutter/sidewalks along the project's roadway frontage, on-site stormwater facilities, landscaping, and new underground utilities. City of Tumwater water and sanitary sewer will be connected to serve the development.

Site Information:

- Thurston County TPN: 79300001100 & 79300001200
- Site Size (per GeoData): 10.49 ac
- Site Size (per survey) ± 10.77
- Site Address: 715 Dennis Street SE & 934 Tumwater Blvd SE
- Zoning: Single Family Medium Density Residential (SFM & SFM2)

The proposed residential development will result in more than 5,000 ft² of new impervious surface. In accordance with the *DDECM*, a Drainage Report is required for this project. As a result, Minimum Requirements 1-11 will need to be addressed. See Table 1 below with the outline of how the project will address the 11 Core Requirements.

Table 1: Compliance with Minimum Technical Requirements

MINIMUM REQUIREMENT	COMPLIANCE WITH MINIMUM REQUIREMENT
#1 - Stormwater Site Planning	The contents of this report and all included appendices are intended to satisfy this requirement.
#2 - Construction SWPPP	A Construction SWPPP will be completed with the final drainage report
#3 - Source Control of Pollution	All known, available, and reasonable source control BMPs shall be applied to all projects to prevent stormwater from coming in contact with pollutants on the developed site.
#4 - Drainage Path Preservation	Preservation of the site's previously established natural drainage paths will be maintained to the maximum extent practicable.
#5 - Stormwater Management	Stormwater LID BMPs will be implemented/constructed to mitigate stormwater runoff. Refer to this report and the stormwater site plan.
#6 - Runoff Treatment	The project will utilize BMP T5.30 Full Dispersion to meet this minimum requirement.
#7 - Flow Control	This project is providing Flow Control by implementing BMP T5.30 Full Dispersion.
#8 - Wetlands Protection	The existing site includes wetlands which will receive stormwater runoff from the proposed improvements that will maintain the wetland hydrology.
#9 - Operation and Maintenance	An Agreement to Maintain Stormwater Facilities will be recorded against the property, if required.

#10 - Financial Liability	A Bond Quantities Worksheet will be completed during final permitting.
#11 - Offsite Analysis and Mitigation	This project will utilize Full Dispersion to meet Core Requirement #7, discharging stormwater towards the existing wetland as under existing conditions therefore no off-site mitigation is required.

SECTION 2: EXISTING SITE CONDITIONS

This is located on an approximately 10.77-acres bounded by Tumwater Blvd to the south, with surrounding residential uses. An existing wetland complex is located north of the property. The site has moderately slopes, generally sloping towards the northeast corner of the property at an average of 5.5% grade. Elevations on site range from 140 to 170 NGVD 29. The site has remained relatively unchanged in the previous 25 years, with some new buildings and trees planted as shown in Figure 1, aerals from 1996 and 2022. There was an existing residence on the eastern parcel that was removed sometime between 2006 to 2009 based on aerals. There is an existing sewer lift station located on the southeast corner of the west parcel constructed as part of the Deschutes River Highland development. The lift station is maintained by the City of Tumwater and is located within an easement.



Figure 1: Site Imagery from 1996 (above) and 2022 (below)

According to FEMA Community Panel Number 53067C0282G, the project is located outside of the 100-year flood zone.

National Flood Hazard Layer FIRMette

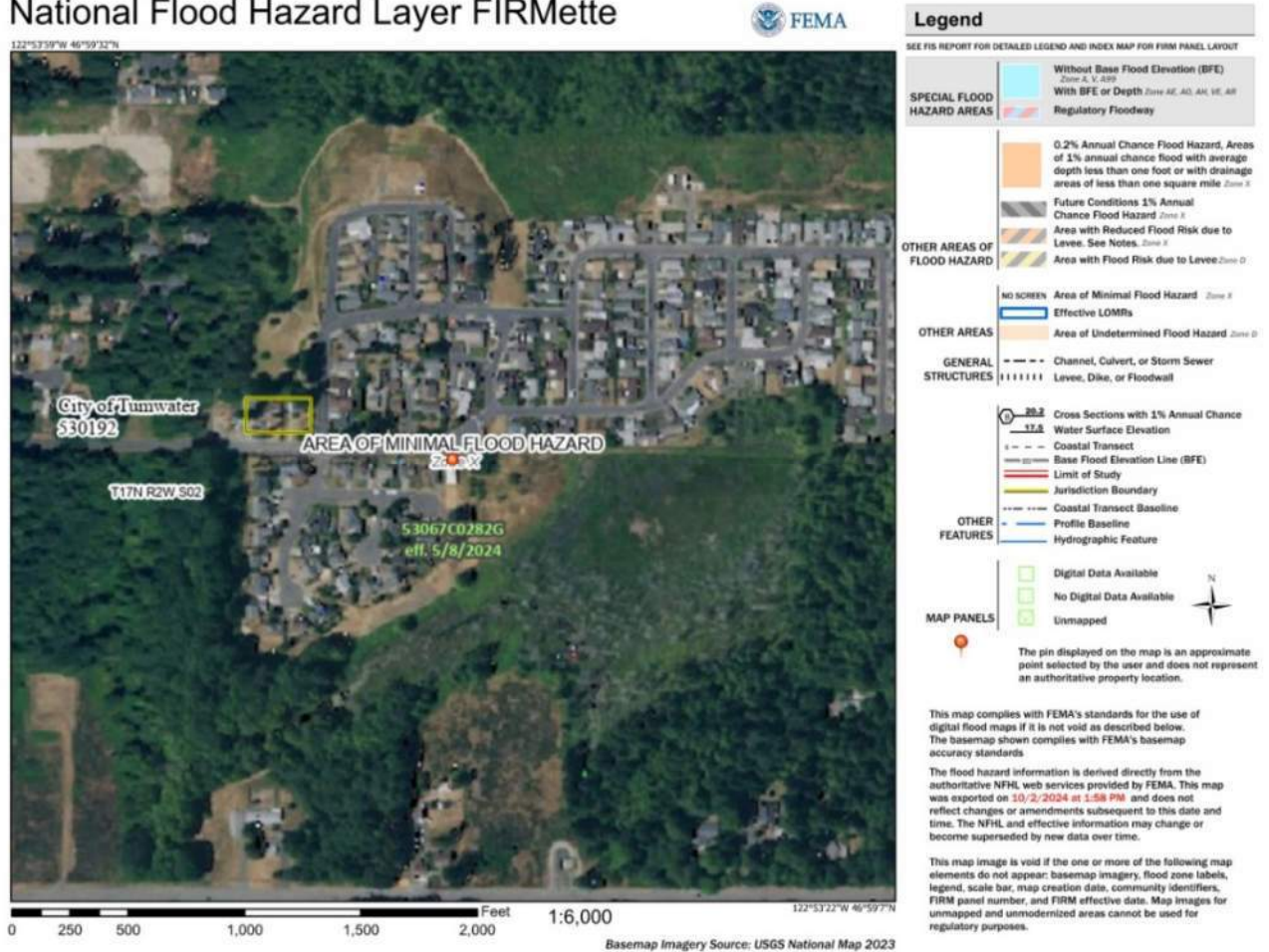


Figure 2: FEMA MAP

SOILS:

Based on the United States Department of Agriculture, Web Soil Survey list the soil type on site as Indianola Loamy Sand. This is considered a Type A soil. See Appendix 2 for Web Soil Survey Report.

WETLAND REPORT:

A wetland report was completed by Land Services Northwest on July 15th, 2024. A 110' buffer has been implemented and can be seen in the Constructions Documents in Appendix 5.

SECTION 3: VICINITY ANALYSIS AND SUBBASIN DESCRIPTION

The existing site slopes from south to the north towards the existing wetland. To match existing flow paths, all improvements are designed to drain toward the wetland. In addition to preserving the flow path this also maintains wetland hydrology by recharging the wetland.

Tumwater Boulevard currently has an existing ditch along the north and south sides of the roadway. Based on as-built information and prior design plans there are multiple culverts that allow the ditch on

the north side of the roadway (along the project frontage) to overflow to the southern ditch. A site visit was conducted on November 14, 2024 during a rain event to establish condition of the ditches and culverts in the vicinity. In general, ditches were full of leaves and other natural debris. There was no standing water found in the ditches and no water actively flowing through any culverts. Based on the site conditions, it is assumed that most water infiltrates within the existing roadside ditches. For the proposed roadway improvements along Tumwater Boulevard which include additional paving, curb, gutter, planter strip and sidewalk the runoff will be collected via catch basins & conveyance piping and discharged to the existing wetland on-site. Runoff will infiltrate and recharge the wetland after discharge from the dispersion trench.

The proposed improvements are divided into 6 separate basins. These basin areas can be seen below in Figure 3, and the areas can be seen in Table 2.

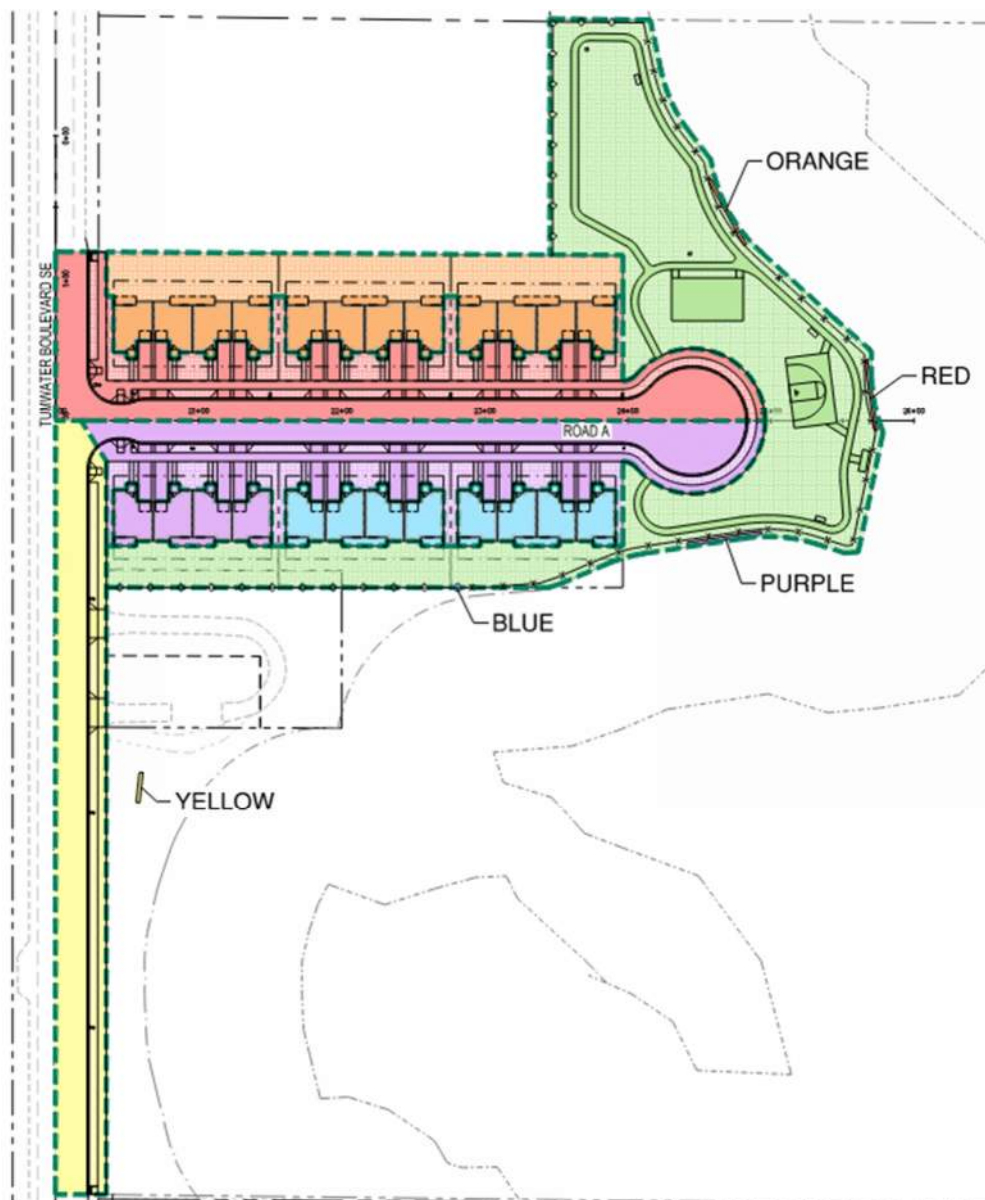


Figure 3: Sub Basin Map

Table 2: Land Type Designations Summary Table

WEST ROOF BASIN (ORANGE)			SOUTH ROAD BASIN (PURPLE)		
	AREA (SF)	AREA (ACRES)		AREA (SF)	AREA (ACRES)
IMPERVIOUS	11,700	0.27	IMPERVIOUS	19,740	0.45
PERVIOUS	11,285	0.26	PERVIOUS	7,885	0.18
SOUTH ROOF BASIN (BLUE)			SHEET FLOW BASIN (GREEN)		
	AREA (SF)	AREA (ACRES)		AREA (SF)	AREA (ACRES)
IMPERVIOUS	7,800	0.18	IMPERVIOUS	5,915	0.14
PERVIOUS	0	0	PERVIOUS	29,045	0.67
WEST ROAD BASIN (RED)			TUMWATER BLVD BASIN (YELLOW)		
	AREA (SF)	AREA (ACRES)		AREA (SF)	AREA (ACRES)
IMPERVIOUS	19,355	0.44	IMPERVIOUS	16,135	0.37
PERVIOUS	8,350	0.19	PERVIOUS	1,945	0.04

SECTION 4: FLOW CONTROL AND WATER QUALITY

Stormwater runoff from this site will be released to the large central wetland in accordance with Section 7.2 Full Dispersion of the DDECM. The list approach for minimum requirement No. 5, on-site stormwater management has been used to analyze the surfaces using List #2.

Lawn and Landscaped Area:

All disturbed lawn and landscaping area will meet BMP 5.30: Post Construction Soil Quality and Depth to satisfy this requirement.

Hard Surfaces:

All hard surfaces will be met using BMP 5.30: Full Dispersion. In order to utilize Full Dispersion, the following criteria must be met:

- Projects that retain 65 percent of the site in a forested or native condition may use dispersion to avoid triggering the flow control facility requirement.
 - The total site area is 10.77 acres, and the area of disturbance on-site is disturbed area of improvements is 2.78 acres 26% of the site area. This leaves 74% in the native condition, therefore this criteria is met.
- Preservation of existing vegetation areas must meet the requirements outlined for BMP C101,
 - The proposed outfall locations flow the existing drainage patterns, therefore this criteria is met.
- A native vegetation flow path of at least 100 feet in length, and no steeper than 15 percent. Flow paths must be spaced to prevent overlap.
 - A minimum of 100' flow paths has been achieved at a slope of 15% or less, with no overlap. See plans in Appendix 5 for exact flow path locations.
- Concentrated Flows cannot exceed 0.20 cfs for a rock pad location and 0.5 cfs for a dispersion trench location.

- There are 6 discharge locations for these improvements, with 5 of those being concentrated flows. These outfalls were modeled in WWHM2012. For outfalls with 100yr post-development flow of less than 0.20 cfs a rock pad has been utilized at the outlet. For flows from 0.2 cfs to 0.5 cfs a flow dispersion trench has been utilized. No outlets exceed 0.50 cfs. See Table 3 for summary.

Table 3: 100-YR Flow Rate Summary

BASIN	100-YR FLOW RATE (CFS)	DISPERSION METHOD
WEST ROOF (ORANGE)	0.244	DISPERSION TRENCH
SOUTH ROOF (BLUE)	0.152	ROCK PAD
WEST ROAD (RED)	0.379	DISPERSION TRENCH
SOUTH ROAD (PURPLE)	0.386	DISPERSION TRENCH
SHEET FLOW (GREEN)	0.165	SHEET FLOW
TUMWATER BLVD (YELLOW)	0.313	DISPERSION TRENCH

See Appendix 1 for a site map of the basin locations, Appendix 4 for the WWHM2012 reports, and Appendix 5 for the Construction Documents.

Wetlands Protections:

The intent for this project is to collect the runoff from the proposed improvements and discharge towards the existing wetland to fully disperse the runoff through the 110' wetland buffer. The runoff from the proposed improvements will be fully dispersed meeting flow control and water quality requirements by the time the discharge enters the wetland. The proposed grading has been designed so any upstream flows that currently contribute to the wetland will be collected by the proposed curb and gutter on the north side of Tumwater Blvd and will allow that flow to continue to recharge the wetland, therefore not diverting any flows from the wetland. This design meets the intent of wetland protection for this wetland.

SECTION 5: AESTHETIC CONSIDERATIONS FOR FACILITIES

All post-construction land features outside of the development area will be restored to pre-construction condition or better.

SECTION 6: CONVEYANCE SYSTEM ANALYSIS AND DESIGN

Stormwater from roadways flow along the gutter line and into catch basins, where it is conveyed to a dispersion trench that discharges to the on-site wetland. Roof runoff is collected and conveyed to dispersion trenches or rock pads as described within section 4 prior to discharge to the on-site wetland. Conveyance sizing will be completed in the final report.

SECTION 7: COVENANTS, DEDICATIONS, EASEMENTS

There will be a 57' Right of Way dedication for new public road with a 10' PSE Easement on either side of roadway. There will be a 5.5' ROW dedication added to the north side of Tumwater Boulevard along the frontage of the property. Other required utility easements will be show with final plans as necessary.

SECTION 8: AGREEMENTS AND GUARANTEES

A Homeowner's Association for the plat will retain ownership of all tracts shown on the plat map and

will be responsible for stormwater facility maintenance.

SECTION 9: OTHER PERMITS OR CONDITIONS PLACED ON THE PROJECT

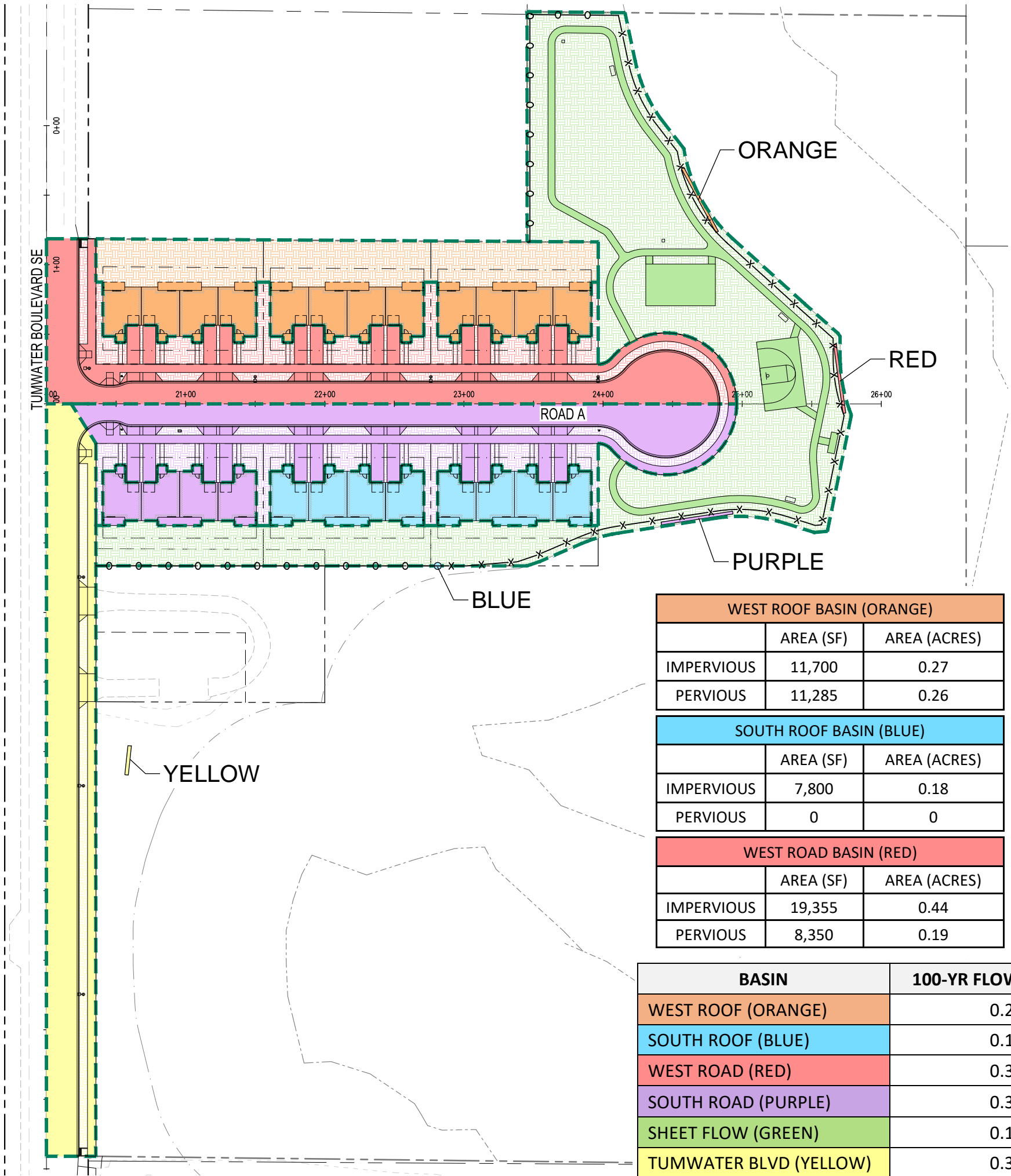
Following Preliminary Plat approval, the Engineering Permits will be applied for from the City of Tumwater.

END OF DRAINAGE REPORT

APPENDIX 1 BASIN MAP

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WEST ROOF BASIN (ORANGE)		
	AREA (SF)	AREA (ACRES)
IMPERVIOUS	11,700	0.27
PERVIOUS	11,285	0.26

SOUTH ROOF BASIN (BLUE)		
	AREA (SF)	AREA (ACRES)
IMPERVIOUS	7,800	0.18
PERVIOUS	0	0

WEST ROAD BASIN (RED)		
	AREA (SF)	AREA (ACRES)
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BASIN	100-YR FLOW RATE (CFS)	DISPERSION METHOD
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SHEET FLOW (GREEN)	0.165	SHEET FLOW
TUMWATER BLVD (YELLOW)	0.313	DISPERSION TRENCH

APPENDIX 2

WEB SOIL SURVEY

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Soil Map—Thurston County Area, Washington



MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features



Blowout



Borrow Pit



Clay Spot



Closed Depression



Gravel Pit



Gravelly Spot



Landfill



Lava Flow



Marsh or swamp



Mine or Quarry



Miscellaneous Water



Perennial Water



Rock Outcrop



Saline Spot



Sandy Spot



Severely Eroded Spot



Sinkhole



Slide or Slip



Sodic Spot



Spoil Area



Stony Spot



Very Stony Spot



Wet Spot



Other



Special Line Features

Water Features



Streams and Canals

Transportation



Rails



Interstate Highways



US Routes



Major Roads



Local Roads

Background



Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service

Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Thurston County Area, Washington

Survey Area Data: Version 18, Aug 27, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 26, 2023—Aug 14, 2023

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
46	Indianola loamy sand, 0 to 5 percent slopes	5.2	62.2%
76	Norma silt loam	3.2	37.8%
Totals for Area of Interest		8.4	100.0%

APPENDIX 3

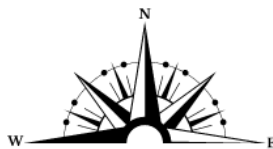
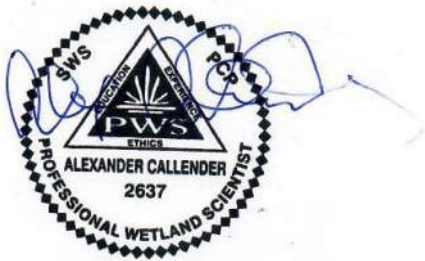
WETLANDS REPORT

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Tenino Land Company Multifamily Residential Project Wetland Delineation Report and Assessment Tumwater, WA

Prepared for
Todd Hansen
Tenino Land Company



Land Services Northwest
Alex Callender MS, PWS
120 State Ave NE PMB 190, Olympia, WA, 98501
360.481.4208

Executive Summary

Site Name: TLC Subdivision

Parcel Numbers: 79300001100 / 79300001200

Site Location: 715 Dennis Street SE / 934 Tumwater BLVD SE **Acreage:** 5.86 and 4.63 acres

Legal Descriptions: Section 02 Township 17 Range 2W Quarter NW SE Plat THOMPSONS TO BRIGHTON PARK LL-0605 LT 3 Document004 /413 and Section 02 Township 17 Range 2W Plat THOMPSONS TO BRIGHTON PARK LT 12Document 007/291 & W 30 F OF VAC ST

Project Staff: Alex Callender MS, PWS **Field Survey Conducted:** May 8, 2024, and August 16, 2024

Project Description: The project proposes a 6 lot quad unit multifamily subdivision with roads, sewer, water, utilities, parking and waste facilities.

Findings: On and offsite Wetlands A and B were found during the recon and delineated. Wetland A is found at the northern edge of both lots and Wetland B was discovered onsite and offsite of parcel 79300001200.

These wetlands were discovered during the reconnaissance and delineated on May 8, 2024, for wetland A and August 16, 2024, for Wetland B.

Wetland A was rated as a Category II wetland with an overall score of 20 and a habitat score of 7 (HLH). The applicant is proposing a PUD and will provide a unique proposal using the impact reducing measures found in Table 16.28.170(5): Measures to Minimize Impacts to Wetlands, the applicant can reduce the buffer from the high intensity 150-foot buffer to the moderate use intensity buffer of 110-feet.

Wetland B was rated as a Category III wetland with an overall score of 19 and a habitat score of five (LMM). Using PUD process to rehabilitat the prairie and the impact reducing measures found in Table 16.28.170(5): Measures to Minimize Impacts to Wetlands, the applicant will reduce the buffer from the high intensity 150-foot buffer to the moderate use intensity buffer of 110-feet.

Impacts: The applicant will be reducing the buffers of the wetland by 21,445 sq ft using the PUD process code to reduce the buffer from 150 feet to 110-feet.

The applicant has prepared a rehabilitation plan to satisfy the PUD process. TMC Section 18.36.010.B.3 *“One point: Go significantly beyond the minimum requirements for critical area protections to preserve, enhance, or **rehabilitate** critical areas and buffers in the planned unit development. Both the applicant and the city shall agree upon the location, size, and extent of the additional protection, enhancement, or rehabilitation.”*

This project proposes to rehabilitate the prairie and wetland habitat in the vicinity of Wetland A. Native plants will be added in the area where the invasive species are removed to improve screening, food resources, nutrient uptake, and beneficial uses of the water that benefits the area fauna. Three wood duck boxes, three bat boxes, and two Martin houses will be installed in the trees at the edge of Wetland A to enhance wildlife habitat at the site. Improvements also include a one-time removal of a large area of Himalayan blackberry and Scotch broom (invasive plant species) which is offsite but adjacent to the wetland and between the site and the wetland. The applicant proposes a more than 4:1 prairie and wetland rehabilitation to reduction ratio in a plan outlined in Chapter 9 of the report to improve wetland and prairie functions.

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1.0 INTRODUCTION

This report is the result of a critical areas study of the following parcels (**Figure 1**):

- The 5.86 parcel number 79300001100 at 715 DENNIS ST SE Olympia, WA with the legal description of Section 02 Township 17 Range 2W Quarter NW SE Plat THOMPSONS TO BRIGHTON PARK LL-0605 LT 3 Document004/413
- The 4.63 parcel number 79300001200 at 934 TUMWATER BLVD SE with the legal description of Section 02 Township 17 Range 2W Plat THOMPSONS TO BRIGHTON PARK LT 12 Document 007/291 & W 30 F OF VAC ST

The purpose of this report is to 1) identify and describe the wetlands or other critical areas on-site and within 315 ft off-site of the property 2) identify impacts to wetlands or critical areas and their buffers, and 3) apply mitigation/rehabilitation and conservation measures to off-set any critical areas or buffer impacts.

This report was prepared to satisfy the critical areas review process required by the City of Tumwater Title 15 – Environment. The City of Tumwater and possibly other agencies that may evaluate impacts to critical areas from the proposed project will be able to utilize information in this report.

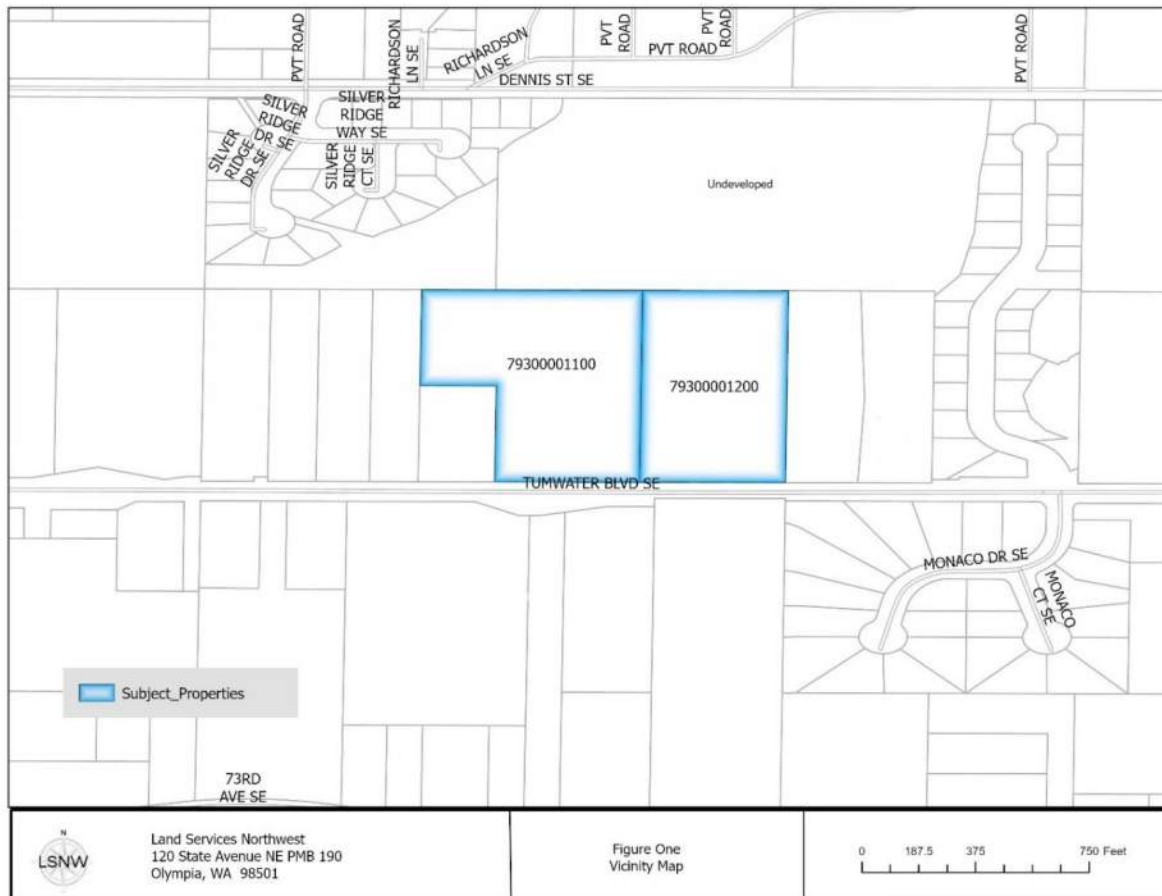


Figure 1-Vicinity Map

2.0 GENERAL DESCRIPTION AND LAND USE

2.1 Historical and Current Land Use

Historically, the parcels are undeveloped with parcel 79300001100 cut and left in pasture with a grove of 20-year-old Douglas fir in the south and Wetland A to the north. Parcel 79300001200 to the east is predominantly forested and undeveloped. There are undeveloped parcels to the north and west and single-family residences to the south, east, and west (**Figure 2**).



Figure 2 - Current Conditions

3.0 METHODOLOGY

3.1 Existing Information Review

Background information on possible wetlands was reviewed prior to field investigations and included the following:

National Wetlands Inventory (NWI) Map, USFWS Shapefile Data (**Appendix B**)

Thurston County Area Soil Survey, Soil Conservation Service (U.S. Department of Agriculture, 1973)
National Resource Conservation Service Shapefiles (NRCS Soils Data Mart, 2006) (**Appendix C**)

Thurston County Geodata Wetland Inventory (**Appendix D**)

USGS 7.5 Minute Quadrangle Topographic Maps (**Appendix E**)

Washington Department of Fish and Wildlife Priority Habitats and Species Database (**Appendix G**)

Washington Department of Fish and Wildlife Salmonscape (**Appendix H**)

NOAA NOW Precipitation Data (**Appendix I**)

Washington Department of Natural Resources Natural Heritage Database

United States Hydric Soils List (U.S. Department of Agriculture 1991)

City of Tumwater

3.2 Analysis of Existing Information

The following existing information was reviewed to gain a better understanding of on-site conditions and its position in the landscape.

National Wetland Inventory (NWI) Map

The National Wetland Inventory (NWI) map (**Appendix B**), developed by the U.S. Fish and Wildlife Service (USFWS), shows Palustrine Forested (PFO) and Palustrine Emergent Persistent Seasonally Flooded (PEM1C) wetlands on and within 315 feet of the subject properties.

NRCS Soils Map

The Natural Resources Conservation Service (NRCS) has mapped the site (**Appendix C**) as containing:

- Norma silt loam
- Indianola loamy sand, 0 to 3 percent slopes and 3 to 15 percent slopes
- Mukilteo muck

Norma silt loam

Map Unit Setting

- *National map unit symbol:* 2ndcc
- *Elevation:* 0 to 1,000 feet
- *Mean annual precipitation:* 35 to 60 inches

- *Mean annual air temperature:* 48 to 52 degrees F
- *Frost-free period:* 150 to 200 days
- *Farmland classification:* Prime farmland if drained

Map Unit Composition

- *Norma, silt loam, and similar soils:* 90 percent
- *Minor components:* 10 percent
- *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Norma, Silt Loam**Setting**

- *Landform:* Depressions, drainageways
- *Parent material:* Alluvium

Typical profile

- *H1 - 0 to 8 inches:* silt loam
- *H2 - 8 to 30 inches:* sandy loam
- *H3 - 30 to 60 inches:* sandy loam

Properties and qualities

- *Slope:* 0 to 3 percent
- *Depth to restrictive feature:* More than 80 inches
- *Drainage class:* Poorly drained
- *Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)
- *Depth to water table:* About 0 to 12 inches
- *Frequency of flooding:* None
- *Frequency of ponding:* Frequent
- *Available water supply, 0 to 60 inches:* Moderate (about 8.9 inches)

Interpretive groups

- *Land capability classification (irrigated):* None specified
- *Land capability classification (nonirrigated):* 5w
- *Hydrologic Soil Group:* B/D
- *Ecological site:* F002XA007WA - Puget Lowlands Wet Forest
- *Forage suitability group:* Wet Soils (G002XS101WA)
- *Other vegetative classification:* Wet Soils (G002XS101WA)
- ***Hydric soil rating:* Yes**

Indianola loamy sand, 5 to 15 percent slopes**Map Unit Setting**

- *National map unit symbol:* 2t635
- *Elevation:* 0 to 980 feet
- *Mean annual precipitation:* 30 to 81 inches
- *Mean annual air temperature:* 48 to 50 degrees F
- *Frost-free period:* 170 to 210 days
- *Farmland classification:* Prime farmland if irrigated

Map Unit Composition

- *Indianola and similar soils:* 85 percent
- *Minor components:* 15 percent
- *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Indianola

Setting

- *Landform:* Terraces, kames, eskers
- *Landform position (three-dimensional):* Riser
- *Down-slope shape:* Linear
- *Across-slope shape:* Linear
- *Parent material:* Sandy glacial outwash

Typical profile

- *Oi - 0 to 1 inches:* slightly decomposed plant material
- *A - 1 to 6 inches:* loamy sand
- *Bw1 - 6 to 17 inches:* loamy sand
- *Bw2 - 17 to 27 inches:* sand
- *BC - 27 to 37 inches:* sand
- *C - 37 to 60 inches:* sand

Properties and qualities

- *Slope:* 5 to 15 percent
- *Depth to restrictive feature:* More than 80 inches
- *Drainage class:* Somewhat excessively drained
- *Capacity of the most limiting layer to transmit water (Ksat):* High to very high (5.95 to 99.90 in/hr)
- *Depth to water table:* More than 80 inches
- *Frequency of flooding:* None
- *Frequency of ponding:* None
- *Available water supply, 0 to 60 inches:* Low (about 3.9 inches)

Interpretive groups

- *Land capability classification (irrigated):* 4e
- *Land capability classification (nonirrigated):* 4s
- *Hydrologic Soil Group:* A
- *Ecological site:* F002XA004WA - Puget Lowlands Forest
- *Forage suitability group:* Droughty Soils (G002XS401WA), Droughty Soils (G002XN402WA)
- *Other vegetative classification:* Droughty Soils (G002XS401WA), Droughty Soils (G002XN402WA)
- **Hydric soil rating: No**

Mukilteo muck, drained

Map Unit Setting

- *National map unit symbol:* 2ndc5
- *Elevation:* 0 to 1,000 feet
- *Mean annual precipitation:* 40 to 70 inches
- *Mean annual air temperature:* 48 to 52 degrees F
- *Frost-free period:* 150 to 250 days
- *Farmland classification:* Prime farmland if drained

Map Unit Composition

- *Mukilteo, drained, and similar soils:* 90 percent
- *Minor components:* 10 percent
- *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Mukilteo, Drained**Setting**

- *Landform:* Depressions
- *Parent material:* Herbaceous organic material

Typical profile

- *Oa - 0 to 6 inches:* muck
- *Oe2 - 6 to 60 inches:* mucky peat

Properties and qualities

- *Slope:* 0 to 2 percent
- *Depth to restrictive feature:* More than 80 inches
- *Drainage class:* Very poorly drained
- *Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)
- *Depth to water table:* About 0 to 24 inches
- *Frequency of flooding:* None
- *Frequency of ponding:* None
- *Available water supply, 0 to 60 inches:* Very high (about 26.9 inches)

Interpretive groups

- *Land capability classification (irrigated):* None specified
- *Land capability classification (nonirrigated):* 5w
- *Hydrologic Soil Group:* B/D
- *Ecological site:* R002XA003WA - Puget Lowlands Bogs and Fens
- *Forage suitability group:* Seasonally Wet Soils (G002XS201WA)
- *Other vegetative classification:* Seasonally Wet Soils (G002XS201WA)
- **Hydric soil rating: Yes**

Minor Components**Shalcar**

- *Percent of map unit:* 5 percent
- *Landform:* Depressions
- *Other vegetative classification:* Wet Soils (G002XS101WA)
- *Hydric soil rating:* Yes

Mukilteo, undrained

- *Percent of map unit:* 5 percent
- *Landform:* Depressions
- *Other vegetative classification:* Wet Soils (G002XS101WA)
- *Hydric soil rating:* Yes

Thurston County Geodata Wetland Inventory

The Thurston County Geodata website has a mapping tool that depicts various critical areas such as streams and wetlands. This site shows a large Palustrine Forested and Scrub Shrub and Palustrine Emergent wetlands on and within 305 feet of the subject properties. (**Appendix D**).

USGS 7.5 Minute Topo Map

The USGS has topographical maps that depict natural and artificial features on the landscape including wetlands. This map shows does not show any features on site or within 300 feet of the site (**Appendix E**).

WADNR Forest Practices Stream Type Map

The Washington State Department of Natural Resources has a map that shows Wetlands, Streams and Lakes and their stream type for the purpose of Forest Practices according to WAC 222-16-3 (**Appendix F**). This map shows a wetland on and within 315 feet of the subject properties.

WDFW Priority Habitats and Species Inventory and Salmonscape Inventory

The Department of Fish and Wildlife maintains an inventory of priority habitats and species information (**Appendix G**). This database shows the Big brown bat, Townsend's big-eared bat and Yuma myotis occurring within 330 ft. These bats may use the many snags in the wetland as borrows for torpor or to hunt macroinvertebrates as they emerge from the wetland. The WDFW Salmonscape shows a seasonal stream far offsite to the west, but it does not show any fish use.

NOAA NOW Precipitation Data

NOAA maintains a database that graphs the current precipitation against the wettest, driest, and normal accumulations of record (**Appendix H**). This data shows that the precipitation since October 1, 2024, has been much drier than average. This is measured at the nearby Olympia Airport which is southwest of the subject property.

3.3 Field Investigation

Determination Guidelines

Land Services Northwest based its wetland identification and delineation upon the 1987 Army Corps of Engineers Wetland Delineation Manual (Environmental Laboratory, 1987) and the regional specificity found in Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0) (USACE, 2010). Generally, as outlined in the manuals, wetlands are distinguished from other landforms by three criteria: 1) hydrophytic vegetation, 2) hydric soils, and 3) wetland hydrology.

General Field Guidelines

Plant species were identified according to the taxonomy in *Flora of the Pacific Northwest* (Hitchcock and Cronquist, 1973), and the wetland status of plant species was assigned according to: *The National Wetland Plant List: 2016* (Lichvar, 2016). Wetland classes were determined by the U.S. Fish and Wildlife Service's system of wetland classification (FGDC, 2013). The wetland determination was based mainly on soils, vegetation, and hydrology characteristics indicative of wetland conditions.

The Corps Manual and Supplement describes soil, vegetation, and hydrological indicators of wetlands. A hydric soil is a soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (National Technical Committee for Hydric Soils, 1994). Anaerobic conditions cause redoximorphic features to develop, which can be evidenced through the observation of mottling or gleying in the soil. Soils are hydric if they match the indicators in the supplement or meet the technical definition.

A soils evaluation was performed to determine if the area contained hydric soils. Additional test plots were sampled to gauge possible wetland indicators and characteristics. Soils are normally excavated to 18 inches or more below the surface within a test pit to evaluate soil characteristics and hydrological conditions in both wetland and upland areas. Soil chroma (color) is evaluated using the *Munsell Color Chart* (Munsell Color, 1988).

The COE describe a wetland rating system for plants. Each species is assigned a probability of occurrence within wetlands, which is referred to as its wetland status. The wetland plant indicator system is as follows:

Table 1 Indicator Status Ratings

Indicator Status	Abrv.	Definitions - Short Version (ERDC/CRREL TN-12-1)
Obligate	OBL	Almost always occur in wetlands.
Facultative Wetland	FACW	Usually occur in wetlands, but may occur in non-wetlands.
Facultative	FAC	Occur in wetlands and nonwetlands.
Facultative Upland	FACU	Usually occur in non-wetlands, but may occur in wetlands.
Upland	UPL	Almost never occur in wetlands.
		(USACE, 2016)

In general, under the Federal methodology, more than 50 percent of the predominant plant species within a test plot must be rated FAC or wetter (i.e., FACW, OBL) to satisfy the wetland criteria for hydrophytic vegetation. Dominant species are those when ranked comprise 50% of the total or those that have a percent cover greater or equal to 20 percent within the test plot. Only dominant plant species were considered in the data analysis.

If wetland hydrology, including pooling, ponding, and soil saturation, is not clearly evident, hydrological conditions may be observed through surface or soil indicators. Indicators of hydrological conditions include drainage patterns, drift lines, sediment deposition, watermarks, historic records, visual observation of saturated soils, and visual observation of inundation.

3.4 Wetland Study

Field Survey

A wetland reconnaissance was performed on May 8, 2024, and August 16, 2024, to identify wetlands present on the subject property. Observations were made of the general plant communities, wildlife habitats, and the locations of potential streams and wetland areas. Present and past land-use practices were also noted, as were significant geological and hydrological features.

Once likely wetland areas were located, the Routine Onsite Determination Method was used to identify the presence of wetland parameters and to delineate the outer edge of the wetlands using the procedures outlined in the *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory, 1987). The Routine Onsite Determination Method was used in areas that maintained normal circumstances, were not significantly disturbed, and were not potential problem areas. A formal wetland delineation was performed on May 8, 2024, and August 16, 2024, to document off-site wetlands and to identify and map off-site wetlands within 315 feet of the subject property as we are able.

Test pits were dug on May 8, 2024, and August 16, 2024 (**Figure 3**) to develop a better understanding of soil profiles onsite. Soils were excavated to 18 inches or more below the surface within a test pit to evaluate soil characteristics and hydrological conditions throughout the site. Soil chroma (color) is evaluated using the *Munsell Color Chart* (Munsell Color, 1988). The result was entered in wetland data sheets (**Appendix I**).

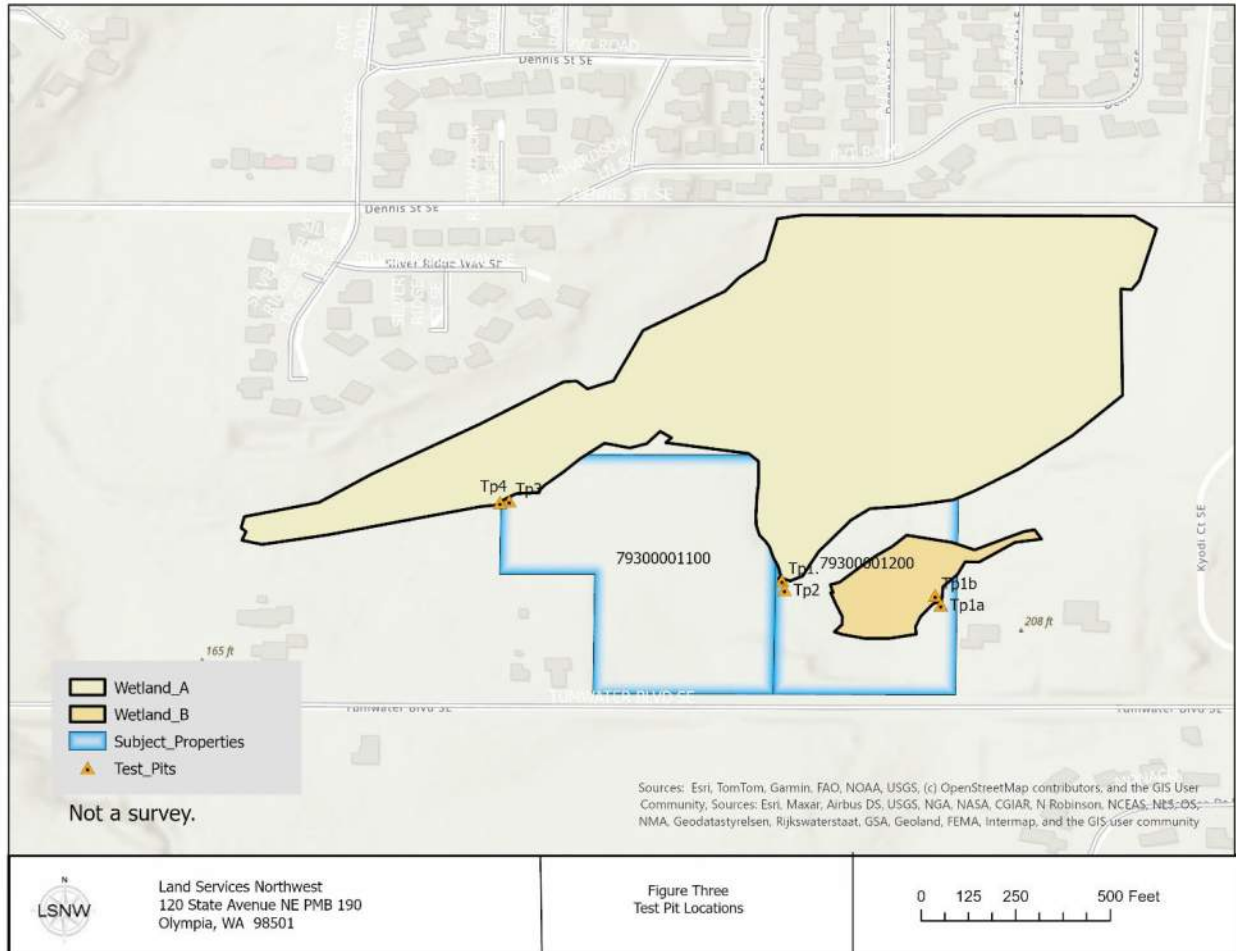


Figure 3 – Test Pit Locations

4.0 RESULTS

4.1 Existing Conditions

Parcel number 79300001100 has a slope from the south to the north with a high point in the south and is a mowed field with 15-20 yr old Douglas fir in the southern portion of the lot along Tumwater Blvd. The slope ends at the wetland that is on the northern border. When the water enters the wetland it drains far offsite to the west. No other wetlands or suspicious areas were found on site. The edge of the property was walked, and other areas were explored during the Mazama pocket gopher study, but there really were no other suspicious areas on site.

Parcel number 79300001200 is predominantly forested with a slope / depressional HGM wetland that starts on the adjacent parcel to the east. There is an upland area that separates the two wetlands, but it was breached by a culvert and short ditch that drains Wetland B into Wetland A.

4.2 Wetlands

Two wetlands were discovered during the reconnaissance and labeled Wetland A and Wetland B.

Wetland A

Wetland A is an aquatic bed, emergent, shrub scrub, forested (Cowardin Class), permanently and seasonally flooded (Hydroperiod) depressional (HGM) wetland with a muck soil. Wetland A was determined to be regulated and was rated using the Wetland Rating System for Western Washington (Hruby et al, 2014).

As mentioned, Wetland A is a large depressional wetland that has developed to the west and north. Its outlet is to the west.

Plants

Red alder (*Alnus rubra*; FAC) Western red cedar (*Thuja plicata*; FAC) Himalayan blackberry (*Rubus armeniacus*; FAC), Skunk cabbage (*Lysichiton americanum*; OBL), slough sedge (*Carex obnupta*; OBL) and Lily pads (*Nuphar polysepala*; OBL) are the primary plants found in the wetland.

Soils

Soils were sampled, and a dark brown 10YR 2/1-2 muck underlain with a 10YR6/2 silt loam.

Hydrology

It was end of the rainy season, so hydrology was directly observed. High groundwater and surface water after rain events sustain wetland hydrology.

Wetland B

Wetland B is a depressional seasonally flooded wetland that drains to Wetland A via a culvert and a very short ditch. Wetland B was determined to be regulated and was rated using the Wetland Rating System for Western Washington (Hruby et al, 2014).

Plants

Western red cedar (*Thuja plicata*; FAC), Red alder (*Alnus rubra*; FAC), Salmonberry (*Rubus Spectabilis*; FAC), Common ladyfern (*Athyrium cyclosorum*; FAC) and Skunk cabbage (*Lysichiton americanum*; OBL) are the primary plants found in the wetland.

Soils

Soils were sampled, and a dark 10YR2/1 underlain with 10YR4/2-4/6 silt loam.

Hydrology

It was end of the rainy season, so hydrology was directly observed on the surface.

5.0 WETLAND FUNCTIONAL VALUES

5.1 Wetland Functional Analysis Methodology

Wetlands, in general, provide many valuable ecological and social functions, including 1) stormwater storage, 2) groundwater recharge, 3) erosion control, 4) water quality improvement, 5) natural biological support, 6) overall habitat functions, 7) specific habitat functions, and 8) cultural and socioeconomic value.

Several procedures have been developed for assessing the importance and magnitude of functions and include the Washington Functional Assessment Method (WAFAM) Wetland Evaluation Technique, the Hydrogeomorphic Assessment Method the Habitat Evaluation Procedure (HEP), and numerous regional and/or local procedures. However, none of these methods were consistent with the needs of this project.

Wetland functions were also semi-quantitatively assessed using information gathered while performing the ECY Wetland Rating System for Western Washington (Hruby, 2014). The scores from the analysis of the wetland are found in Appendix H. This method is a comprehensive approach requiring substantial data input and assessment of onsite and landscape functions. The descriptions of wetland functions and the factors and parameters considered by that method are very helpful in interpreting the functioning of the subject wetlands and buffer areas. The methodology is scientifically based, in that its application requires a prior understanding of how wetlands function. Advanced experience, training and scientific objectivity of a wetland scientist applying the method is essential for an accurate assessment. Alex Callender has attended and received credit for the training in this method.

5.2 Wetland Functions

Wetland A

Wetland A is an approximately 15.77 - acre mostly undisturbed depressional wetland that drains much of the area south of Tumwater Boulevard and south of Dennis street and West of Henderson Boulevard.

Water Quality

Wetland A has constricted outlet and greater than 1/2 of the vegetation is ungrazed as there is aquatic bed vegetation open water in a portion of the wetland. The wetland has mapped organic soils and the area that is seasonally flooded is less than 1/4 of the overall area.

The wetland does not have greater than 10% of the buffer in pollution generating land use. There are septic systems within 250 feet of the wetland. There are no other pollution generating activities surrounding the wetland.

The wetland discharges within a mile of a 303d waterbody. It has a 303 d water in the basin. There is a TMDL planned for the Deschutes basin.

Hydrologic Functions

Wetland A is a depressional wetland that drains offsite to the west via a constricted outlet. Marks of ponding are 2-3 ft. The contributing basin is 10-100 times the size of the Wetland Unit.

The unit does not receive stormwater. >10% of the wetland is impervious surface. The wetland has more than 25% of the area of the catchment basin in high intensity land use. There is surface flooding in some areas in the wetland drainage basin further downstream, but the wetland is not mentioned in any flood plans or studies as important for this function.

Habitat functions

Wetland A has a high interspersed structure as there is aquatic bed, emergent, shrub scrub and forested areas. Wetland A does not have a lot of vegetative species diversity with a forested fringe of alders and western red cedars and twinberry, Himalayan blackberry, and an emergent lily pad and cat tail interior. There is not much wetland hydroperiod diversity as it has a hard edge and is permanently flooded with a small band of seasonally flooded area. Wetland A has high density development in the area as there are subdivisions that surround the wetland and the airport rates high for land use in the landscape position, so it rates moderate. Wetland A has little high intensity accessible habitat, so it rates moderate for this feature as well.

There are snags and logs and a stream at its outlet, so it rates high for priority habitats and species. There were no other priority habitats and species found in the area via the PHS Mapping tools, and no pocket gophers or prairie was found onsite.

Wetland B

Wetland B is an approximately 1.06 acre mostly undisturbed forested depressional wetland that drains to Wetland A during periods of high precipitation.

Water Quality

Wetland B has an intermittently flowing stream or ditch. The wetland has mapped organic soil and has persistent ungrazed plants on greater than fifty percent of the area. The area that is seasonally flooded is less than 1/4 of the overall area.

The wetland does not have stormwater discharge and greater than ten percent of the land use within 150 ft. is pollution generating. There are septic systems within 250 ft. of the wetland.

The wetland discharges within a mile of a 303d waterbody. It has a 303 d water in the basin. There is a TMDL planned for the Deschutes basin.

Hydrologic Functions

Wetland B has an intermittently flowing stream or ditch. Marks of ponding are 2-3 ft. The contributing basin is 10-100 times the size of the Wetland Unit.

The wetland does not receive stormwater discharges. Greater than 10 percent of the area within 150 ft generates excessive runoff. More than 25 percent of the catchment basin of the wetland is covered by intensive human land uses that promote runoff (Land Use Intensity in the basin has >25% in 1 residential unit per acre or greater, or commercial /industrial use.

There is surface flooding in some areas in the basin further downstream, but the site is not mentioned in any local or regional plans as important for this function.

Habitat functions

Wetland B has two vegetative structures – forested and forested with 3 layer's There is one hydroperiods which is seasonally flooded and has moderate diversity with 5 to nineteen plant species. The wetland area has one Cowardin classifications, so it has a low interspersions of habitat. There is large, downed woody debris, snags and logs.

Ten to nineteen percent of the 1km is accessible habitat and the undisturbed habitat is ten to fifty percent of the area in more than three patches. Less than fifty percent in the 1km polygon is high intensity land use.

There were no other priority habitats and species found in the area via the PHS Mapping tools, and no pocket gophers or prairie was found onsite.

6.0 REGULATORY CONSIDERATIONS

6.1 City of Tumwater Regulations

The City of Tumwater regulates wetlands using a combination of land use intensity wetland category and habitat scores.

Wetland A was rated as a Category II wetland with an overall score of 20 and a habitat score of 7 (MMH). Using the impact reducing measures found in Table 16.28.170(5): Measures to Minimize Impacts to Wetlands, the applicant can reduce the buffer from the high intensity 150-foot buffer to the moderate use intensity buffer of 110-feet.

Wetland B was rated as a Category III wetland with an overall score of 19 and a habitat score of five (LMM). There are no impacts to the wetland proposed and through the PUD process we will improve the overall buffer by using the buffer impact reducing measures found in Table 16.28.170(5): Measures to Minimize Impacts to Wetlands, the applicant will reduce the buffer from the high intensity 150-foot buffer to the moderate use intensity buffer of 110-feet and provide treatments to enhance the buffer function.

Table 16.28.170(2) Explanatory Notes:

(1) No information on other measures for protection was available at the time the 2014 Washington State Wetland Rating System for Western Washington was written. The Washington State Department of Ecology will continue to collect new information for future updates of the 2014 rating system.

Table 16.28.170(3): Category III Wetland Buffer Widths**(Buffers for wetlands scoring sixteen to nineteen points for all functions)**

Wetland Characteristics	Buffer Widths by Impact of Proposed Land Use	Other Measures Recommended for Protection
Moderate level of function for habitat (score for habitat 5 – 7 points) If wetland scores 8 – 9 habitat points, use Table 16.28.170(2) : Category II Wetland Buffer Widths	Low – 75 ft Moderate – 110 ft High – 150 ft	No recommendations at this time (1)
Score for habitat 3 – 4 points	Low – 40 ft Moderate – 60 ft High – 80 ft	No recommendations at this time (1)

Table 16.28.170(3) Explanatory Notes:**16.28.170 Wetland buffers.**

A. Standard Buffer Zone Widths. Wetland buffer zones shall be required for all regulated activities adjacent to regulated wetlands.

- Any wetland created, restored or enhanced as compensation for approved wetland alterations shall also include the standard buffer required for the category of the created, restored, or enhanced wetland.
- All buffers shall be measured from the wetland boundary as surveyed in the field pursuant to the requirements of TMC [16.28.080](#).
- The width of the wetland buffer zone shall be determined according to wetland category, the functions and special characteristics of the wetland, and the proposed land use.
- Wetlands of high conservation value, bogs, and forested wetlands shall have the buffers shown in the table below independent of points scored for habitat in the rating system.
- If a wetland meets more than one of the characteristics listed in Tables 16.28.170(1) to 16.28.170(4), the buffer recommended to protect the wetland is the widest one.

C. **Buffer Width Reduction.** The buffer widths recommended for land uses with high-intensity impacts to wetlands can be reduced to those widths recommended for moderate-intensity impacts under the following conditions:

1. For wetlands that score moderate or high for habitat (five points or more), the width of the buffer around the wetland can be reduced to 110 feet through the PUD process if it is agreed that the project will provide the community with something beyond a typical mitigation.

As a condition of the PUD application the applicant will maintain:

- a. A relatively undisturbed vegetated corridor at least one hundred feet wide is protected between the wetland and any other priority habitats as defined by the Washington State Department of Fish and Wildlife. The corridor must be protected for the entire distance between the wetland and the priority habitat via some type of legal protection such as a conservation easement; and

There is a 110-ft buffer after the reduction. The applicant will maintain this as a condition of the application. In addition, the applicant will implement the measures below as applicable.

- b. Measures to minimize the impacts of different land uses on wetlands, such as the examples summarized in Table 16.28.170(5), will also be applied.

Table 16.28.170(5): Measures to Minimize Impacts to Wetlands

Examples of Disturbance	Examples of Measures to Minimize Impacts	Activities That Cause the Disturbance
Lights	Direct lights away from wetland	Parking lots, warehouses, manufacturing, residential
Noise	Locate activity that generates noise away from wetland	Manufacturing, residential
Toxic runoff (1)	Route all new runoff away from wetland while ensuring that wetland is not dewatered Establish covenants limiting use of pesticides within 150 ft of wetland Apply integrated pest management	Parking lots, roads, manufacturing, residential areas, application of agricultural pesticides, landscaping
Stormwater runoff	Retrofit stormwater detention and treatment for roads and existing adjacent development Prevent channelized flow from lawns that directly enters the buffer	Parking lots, roads, manufacturing, residential areas, commercial, landscaping

Table 16.28.170(5): Measures to Minimize Impacts to Wetlands

Examples of Disturbance	Examples of Measures to Minimize Impacts	Activities That Cause the Disturbance
Change in water regime	Infiltrate or treat, detain, and disperse into buffer new runoff from impervious surfaces and new lawns	Impermeable surfaces, lawns, tilling
Pets and human disturbance	Use privacy fencing Plant dense vegetation to delineate buffer edge and to discourage disturbance using vegetation appropriate for the ecoregion Place wetland and its buffer in a separate tract	Residential areas
Dust	Utilize best management practices to control dust	Tilled fields

Table 16.28.170(5) Explanatory Notes:

(1) These examples are not necessarily adequate to meet the rules for minimizing toxic runoff if threatened or endangered species are present at the site.

The applicant will be able to meet the requirements of the table above. (See section 8.2 for implementation)

The wetlands, and their buffers are depicted below (**Figure 4**).

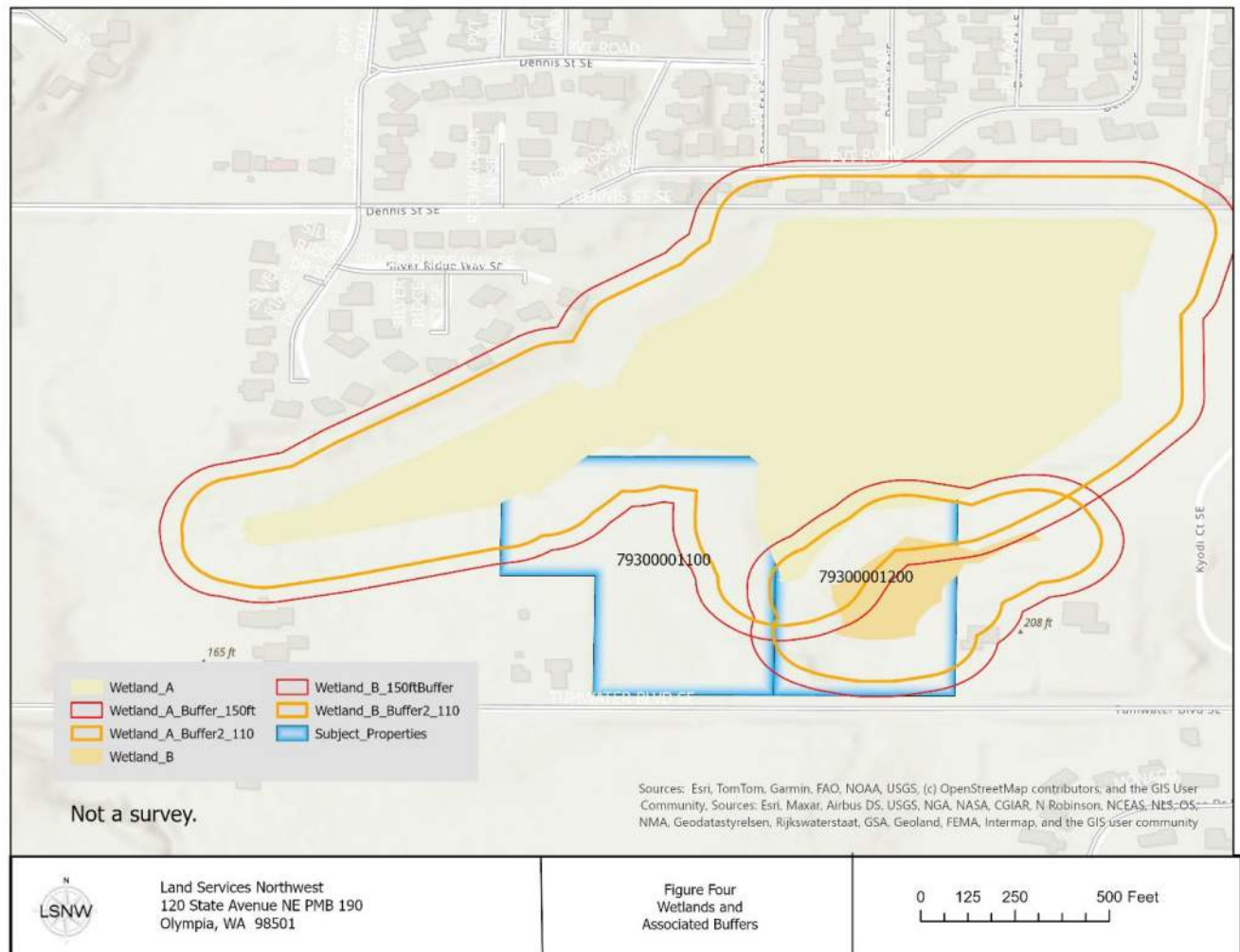


Figure 4 – Standard 150 ft Wetland Buffers and 110 ft Reduced Buffers.

Table 2 - Summary of Wetlands and Streams on or in the Vicinity of the Subject Property

Wetland	Size (Acres)		Category	Habitat Score	Base Buffer Width (feet)	Buffer after rehabilitation	Comments
	On-site	Off-site (estimated)					
Wetland A	0.2894	~15.57	II	7 (MMH)	150	110	Buffer reduction using table and 92,000 sq ft of wetland buffer enhancement and prairie enhancement with rehabilitation to be applied.
Wetland B	.99	0.7	III	5 (LMM)	150	110	No development activity

6.2 Corps Regulations

Wetlands A and B flow offsite and eventually to the Deschutes River and then to the Puget Sound. Therefore, they would be maintained as a Water of the US and regulated under the Clean Water Act. No impacts are proposed to Wetlands A or B beyond the buffer reduction.

6.3 Department of Ecology

Under RCW 90.48, the Washington Department of Ecology (DOE) reserves regulatory authority to regulate “waters of the state” under Section 401 of the Clean Water Act. No wetland impacts are proposed.

7.0 WILDLIFE

Wildlife observed during the field investigations are typical of urban/suburban adapted species (Table 2). The European starling, possum, and other species adapted to urbanization may inhabit or visit the site for food and shelter.

No other Federally-listed, or priority species was observed on the subject property or near the site based on the WDFW Priority Habitats and Species (PHS) and field observations during the

reconnaissance and delineation. During the limited duration of the site reconnaissance and delineation, no evidence of the Federally-listed Bald Eagle, Marbled Murrelet, or Spotted Owl was observed on-site.

No Federally-listed salmonid species are known to occur on-site, based on the WDFW SalmonScape database, the WDFW PHS database, and site reconnaissance.

No wildlife was observed on site during site visit beyond the occasional mole mound and deer and coyote scat.

8.0 PROPOSED PROJECT

8.1 Description

The project proposes a 6 lot quad unit multifamily subdivision with roads, sewer, water, utilities, parking and waste facilities. **(Figure 5 – Site Plan)**

8.2 Development Impacts

No direct impacts to the wetlands are expected. Wetland buffers will be reduced from 150 ft to 110 feet using measures in code. This will require the special mitigating measures invoked by the PUD process. Specifically, the PUD Public Benefit Point Two – Critical Areas Enhancement:

TMC Section 18.36.010.B.3 “One point: Go significantly beyond the minimum requirements for critical area protections to preserve, enhance, or rehabilitate critical areas and buffers in the planned unit development. Both the applicant and the city shall agree upon the location, size, and extent of the additional protection, enhancement, or rehabilitation.”

This project proposes to rehabilitate and enhance the prairie and wetland habitat in the vicinity of Wetland A. Improvements include a one-time improvement of a large area of Himalayan blackberry and Scotch broom, English holly and English hawthorne (invasive plant species). This area is offsite and currently owned by the applicant, but cannot be maintained in the future due to ownership. Native plants will be added in the area where the invasive species are removed to enhance the buffer by improving: screening, food resources, nutrient uptake, and shade for the beneficial uses of the water that benefits the area fauna. The onsite areas immediately next to the Wetland A will have dense native plants installed with a 10 year monitoring plan for maintenance and contingencies. The area beyond the wetland enhancement area will be reserved for a prairie restoration area which will also have maintenance and contingencies provided for up to ten years. Additional habitat features will be installed near the Wetland A to include Three wood duck boxes, three bat boxes, and two Martin houses will be installed in the trees at the edge of Wetland A to enhance wildlife habitat at the site. Outside of the prairie rehabilitation area an open space area with walking paths, interpretive signage and viewing platforms will provide additional vegetation and amenities for the community to see a south sound prairie and introduce this special habitat only found in this part of the country..

To reduce the impacts of development, other measures will be applied from the table as applicable to include:

- Direct Lights Away
- Locate activity that generates noise away from the wetland
- Route all new runoff away from wetland while ensuring that wetland is not dewatered. (Level Spreader to be Installed)

Scale: 1" = 100'



**PRELIMINARY 80T
PLAN**

- HOA to Establish covenants limiting use of pesticides within 150 ft of wetland
- Use integrated pest management (**Appendix K**)
- Infiltrate or treat, detain, and disperse into buffer new runoff from impervious surfaces and new lawns (level spreader)
- Plant dense native vegetation prairie and buffer plants in the buffer. Remove invasive species where present to include scotch broom and Himalayan blackberries (See Chapter 9).
- Utilize best management practices to control dust (Construction BMP's for Dust).

8.3 Impact Avoidance and Minimization

The development plan should concentrate the development area primarily to the center of the lot which will be designed to maintain stormwater on site. Native plants will maintain the screening that a buffer typically provides along with the erosion control. The mitigating measures mentioned in earlier chapters will minimize the impacts of the project to buffers and maintain no-net-loss of wetland functions and values.

The applicant has identified the area that needs invasive species removal and native plant rehabilitation and will systematically remove blackberries and scotch broom while planting native species that if successful would create a much more resilient and better functioning wetland and buffer. The applicant has avoided all of the wetland impacts and will minimize future impacts by limiting access to the area and by thoughtfully controlling invasive species.

The buffer/prairie rehabilitation area is also a place that has native prairie outwash soils that are required for several south sound prairie species such as the Taylors checkerspot butterfly, the Mardon skipper and Mazama pocket gopher. Although these species were not found onsite, they could use this area in the future and the plant species that we are installing to enhance the area are known to be utilized during their life cycles.

8.4 Minimization of Water Quality Impacts

Implementing water quality and sedimentation best management practices (BMPs) will act to minimize sedimentation and protect water quality on-site and any bare areas will be planted with a cover crop. Silt fences and straw waddles will be used where necessary. Splash blocks and infiltration galleries and level spreaders will be used to reduce stormwater impacts from the residences. The increase in vegetation from the proposed buffer and prairie rehabilitation plan will provide for increased surface roughness and nutrient uptake, food sources, and erosion protection.

9.0 Buffer and Prairie Invasive Species Removal and Native Plant Rehabilitation Plan

9.1 PUD Requirements

It was determined that in order to meet the second point of the PUD the applicant will rehabilitate the **buffer** of Wetland A and provide a prairie planting to benefit endangered prairie species. This will require rehabilitation of the buffer by removing invasives and replacement with native plants at a density to provide a resilient buffer that will be self-maintaining once established.

To allow the reduction of the standard 150 ft **buffer** to the reduced 110 ft buffer through the PUD process, the applicant needs to go beyond what is typically required for a buffer reduction. The Department of Ecology BAS has guidance for buffers that are not adequately vegetated, or contain non-native species. They mention that it is generally better to improve the vegetation than widen the buffer (ECY, 2005). Typically, with buffers a 1:1 reduction of buffer, to vegetated buffer rehabilitation ratio is required using native plants. In this case we would like to do more than what is typical, as encouraged by the PUD. This project will require 21,445 sq ft of buffer reduction for the common space and back yards of lots. What is proposed amounts to a buffer rehabilitation plan which will provide ~400 percent more area than the 1:1 improvement typically required for a buffer reduction. No-net-loss of wetland functions and values will be maintained and there will be benefits to prairie habitats as well. The project should be educational too.

The area is mapped with Indianola Loamy Sand 0-3% slopes which is a more preferred MPG soil and Norma Silt loam which is less preferred. Both of these soils are habitat indicators for the Mazama pocket gopher and the Indianola soils are also native prairie soils. To mitigate for the buffer reduction, we propose enhancing the area between the development and the wetland using three different restoration activities which will improve wetland and prairie functions which have both been impacted by invasive species. We will use this unique opportunity to develop a successful wetland and prairie restoration. As mentioned in the now implemented Thurston HCP, sites which exhibit resiliency would be preferred and this has a transition from wetland to upland after planting should provide diversity so that it can maintain itself through adverse climatic conditions.

This Rehabilitation Plan was developed by Alex Callender MS, PWS. He has over 21 years of experience creating, installing and monitoring buffer enhancement mitigation and rehabilitation plans.

The buffer and prairie rehabilitation activities are as follows:

- The applicant proposes to have the non-native scotch broom and non-native blackberry removed and replanted with 16,117 sq ft of native prairie species which will provide numerous benefits to the threatened butterflies and become a landscape amenity that connects the community with the presence of South Sound Prairie.
- 7,035 sq ft of offsite upland area will receive a one-time treatment to remove invasive species. This area is important because it is adjacent to the wetland and is dominated by Himalayan blackberry and scotch broom and left alone, this area would be a source of invasive species recruitment that could impact the new plantings we are proposing for the subject property.

After treatment the area will be planted with native Garry oaks, Red twig dogwood, and snowberry. These plants are relatively aggressive native plants that should outcompete the blackberries and scotch broom and prevent a resurgence of these species.

Three Wood duck boxes, three bat boxes and two Martin houses will be installed in the trees at the edge of Wetland A.

- The remaining 68,384 sq ft area between the northern property boundary and the northern edge of the prairie restoration area will have non-native plants removed and native shrubs and trees planted to maintain the screening between the wetland and the development.
- Outside of the main rehabilitation areas will be a 28,380 sq ft of intermediate buffer of ornamental landscaping that can be utilized as buffer as well. This area encompasses a passive foot path with viewing platforms and interpretive signs..

The applicant will combine the mitigating measures found in Table 16.28.170(5). and the qualifications found in TMC Table 16.28.170(2):

As directed, the applicant will do the following in accordance with the objective of meeting the intent of the PUD special

- Lights will be directed away from the wetland and buffers.
- Pesticide limited within 150 ft of wetland.
- Fence off the wetland
- Runoff will be infiltrated onsite to keep from dewatering the wetland
- Use LID infiltration on downspouts.
- 91,555 sq ft of dense native vegetation will be planted in buffer between the development and the wetland area which is approximately a 4 to 1 rehabilitation area to impact area ratio which is well above the typical 1: 1 ratio required in most cases.
- Remove invasive species in the rehabilitation area
- Other mitigation measures from this table will be implemented as applicable.

• **Table 16.28.170(5): Measures to Minimize Impacts to Wetlands**

Examples of Disturbance	Examples of Measures to Minimize Impacts	Activities That Cause the Disturbance
Lights	Direct lights away from wetland	Parking lots, warehouses, manufacturing, residential
Noise	Locate activity that generates noise away from wetland	Manufacturing, residential
Toxic runoff (1)	Route all new runoff away from wetland while ensuring that wetland is not dewatered Establish covenants limiting use of pesticides within 150 ft of wetland Apply integrated pest management	Parking lots, roads, manufacturing, residential areas, application of agricultural pesticides, landscaping
Stormwater runoff	Retrofit stormwater detention and treatment for roads and existing adjacent development Prevent channelized flow from lawns that directly enters the buffer	Parking lots, roads, manufacturing, residential areas, commercial, landscaping

• **Table 16.28.170(5): Measures to Minimize Impacts to Wetlands**

Examples of Disturbance	Examples of Measures to Minimize Impacts	Activities That Cause the Disturbance
Change in water regime	Infiltrate or treat, detain, and disperse into buffer new runoff from impervious surfaces and new lawns	Impermeable surfaces, lawns, tilling
Pets and human disturbance	Use privacy fencing Plant dense vegetation to delineate buffer edge and to discourage disturbance using vegetation appropriate for the ecoregion Place wetland and its buffer in a separate tract	Residential areas
Dust	Utilize best management practices to control dust	Tilled fields

Table 16.28.170(5) Explanatory Notes:

(1) These examples are not necessarily adequate to meet the rules for minimizing toxic runoff if threatened or endangered species are present at the site.

9.2 Integrated Pest Management

The applicant will use the integrated pest management plan (IPM) methods and utilize management recommendations from the Thurston County IPM Website. The primary objectives of the planting plan is to provide shrub species that will shade and outcompete the two main species which require control; Himalayan blackberry, scotch broom, English holly and the Single seeded hawthorne. The applicant will use manual or mechanical means as the preferred method for removal of the Himalayan and Evergreen blackberries on site. If these methods are found to be ineffective or infeasible, Other more aggressive methods will be considered to include use of popular effective herbicides consistent with the recommended label application rates and conducted during the dry season by licensed applicators. Other species which may require control from time to time will use recommendations from the Thurston County Noxious Weed website and the Homeowner IPM recommendations adopted for this particular purpose.

9.3 Functional Analysis

The following planting plan to rehabilitate the buffer will maintain wetland functions and improve the overall landscape as well by:

- providing increase roughness
- increasing nutrient uptake of stormwater
- increasing site plant diversity
- Provide screening for wildlife,
- Provide shade for water quality and habitat,

- Produce food for wildlife and structure.
- Provide nectar for threatened butterflies

Currently, the area that will be impacted is field with invasive Himalayan blackberry and Scotch broom. There is a lack of prairie and tree and shrub vegetation and the screening that it provides. This plan will provide a properly rehabilitated buffer in the area, where it matters most, between the wetland and the residences. The planting plan will provide species diversity and structure as well as roughness.

Areas will be planted with buffer plants, which will not only provide benefits already mentioned, but will also become a landscape amenity that combines the practical plantings with aesthetic attributes of our native flora.

The following analysis uses the qualitative scoring values similar to the values developed in the Wetland Rating System for Western Washington (Hruby, 2014). The best available science has found that the resolution of value can only be rated using a qualitative system and maintain a rapid assessment of less than one day. Therefore, we have examined common buffer functions for wetland protection and other habitats to show the overall expected lift by the rehabilitation plan. The functions we are studying were found in the latest buffer BAS (Hruby, 2013)

TABLE 3 – Buffer Functions Comparison Before and After Rehabilitation

Buffer Perf criteria	Other Habitats (Bat, Martin and Wood duck habitat)	Screening	Nutrient uptake	Invasive Species	Structure	Surface roughness	Temperature attenuation	Diversity
Before mitigating measures	Low	Medium	Medium	High	Low	Medium	Medium	Low
After mitigating measures	Medium	High	Medium	Low	High	Medium	Medium	Medium

The rehabilitation measures once applied should provide new habitat for birds, bats and macroinvertebrates and restore habitat for the Taylor's checkerspot and Mardon skipper.

9.4 Planting Plan

To provide for a higher functioning a wetland and prairie, a wetland invasive removal plan was developed to make the remaining buffer and wetland more resilient and effective. Figure 6 illustrates

the placement area which was created to maximize plant performance by placing species in a position in the landscape where they will thrive and provide the most benefit to the system.

Trees and shrubs will be planted at grade in holes 2-3 times the width of the container or root ball. Mulch will be applied around each tree 2-4 inches deep in a three-foot diameter around the tree with an edge to retain water. Containerized rootbound trees will be cut with sharp shears on the bottom in an x pattern to promote root growth. Four cuts will be made vertically to allow roots to spread. Trees and shrubs will be thoroughly watered after installation.

Table 4 – Clear, Plant, and Leave Area #1 (7,035 sq ft)

Common Name	Scientific Name	Size	Spacing	Quantity	Cost ea.	Total
Oregon white Oak	<i>Quercus garryana</i>	1 Gallon	15 ft O.C.	4	\$10.00	\$40.00
Snowberry	<i>Symphoricarpos alba</i>	1 Gallon	5 ft O.C.	60	\$10.00	\$600.00
Pacific willow	<i>Salix lasiandra</i>	1 Gallon	8 ft oc	20	\$10.00	\$200.00
Red osier dogwood	<i>Cornus sericea</i>	1 Gal	8ftnoc	20	\$10.00	200.00
Total				104		\$1040.00

Table 5 --Prairie Restoration (16,117 sq ft)

Common Name	Scientific Name	Size	Spacing	Quantity	Cost ea.	Total
Common camas	<i>Quamash cammassia</i>	1 Gallon	3 ft O.C.	115	\$3.00	\$345.00
Buttercup	<i>ranunculus occidentalis</i>	1 Gallon	3 ft O.C.	20	\$10.00	\$200.00
Large-leaved lupine	<i>Lupinus polyphyllus</i>	1 Gallon	3 ft O.C.	25	\$10.00	\$250.00
Common yarrow	<i>Achillea millefolium</i>	1 gallon	5 ft oc	20	\$10.00	\$200.00
Prairie Seed mix to be developed				1 pound		tbd
Total				180		\$995.00

Table 6 – Buffer Rehabilitation Area (68,384 sq ft)

Common Name	Scientific Name	Size	Spacing	Quantity	Cost ea.	Total
Serviceberry	<i>Amelanchier alnifolia</i>	1 Gallon	8 ft O.C.	25	\$10.00	\$250.00
Salal	<i>Gaultheria shallon</i>	1 Gallon	5 ft O.C.	100	\$10.00	\$1,000.00
Oregon grape	<i>Mahonia nervosa</i>	1 Gallon	5 ft O.C.	100	\$3.00	\$300.00
Red flowering currant	<i>Ribes sanguineum</i>	1 Gallon	8 ft O.C.	25	\$10.00	\$250.00
Salmonberry	<i>Rubus spectabilis</i>	1 Gallon	8 ft O.C.	25	\$10.00	\$250.00
Oceanspray	<i>Holodiscus discolor</i>	1 Gallon	8 ft O.C.	25	\$10.00	\$250.00
Pacific crabapple	<i>Malus fusca</i>	1 Gallon	8 ft O.C.	25	\$10.00	\$250.00
Evergreen huckleberry	<i>Vaccinium ovatum</i>	1 Gallon	8 ft O.C.	25	\$10.00	\$250.00
Thimbleberry	<i>Rubus parviflorum</i>	1 Gallon	8 ft O.C.	25	\$10.00	\$250.00
Red twig dogwood	<i>Cornus sericea</i>	1 Gallon	8 ft O.C.	25	\$10.00	\$250.00
Noble fir	<i>Abies procera</i>	1 Gallon	15 ft O.C.	20	\$10.00	\$200.00
Sitka spruce	<i>Pinus sitchensis</i>	1 Gallon	15 ft O.C.	20	\$10.00	\$200.00
Western hemlock	<i>Tsuga heterophylla</i>	1 Gallon	15 ft O.C.	20	\$10.00	\$200.00
Bitter cherry	<i>Prunus emarginata</i>	1 Gallon	15 ft O.C.	25	\$10.00	\$250.00
Vine maple	<i>Acer circinatum</i>	1 Gallon	15 ft O.C.	20	\$10.00	\$200.00
Osoberry	<i>Oemleria cerasiformis</i>	1 Gallon	15 ft O.C.	30	\$10.00	\$300.00
Total				535		\$4,650.00

Table 7- Total Costs

Labor	100/hour	\$6,500.00
Mulch	\$100/5 yards	\$200.00
Monitoring w/report (5 years)*	200.00/yr.	\$2,000.00

Plants and Materials		\$6,685.00
Total		\$13,385.00

*=Not included in Costs

PROJECT NAME: TENINO LAND CO MULTIFAMILY
PROJECT #
PARCEL # 79300001100 / 79300001200
ADDRESS - XXXX TUMWATER, WA 98501

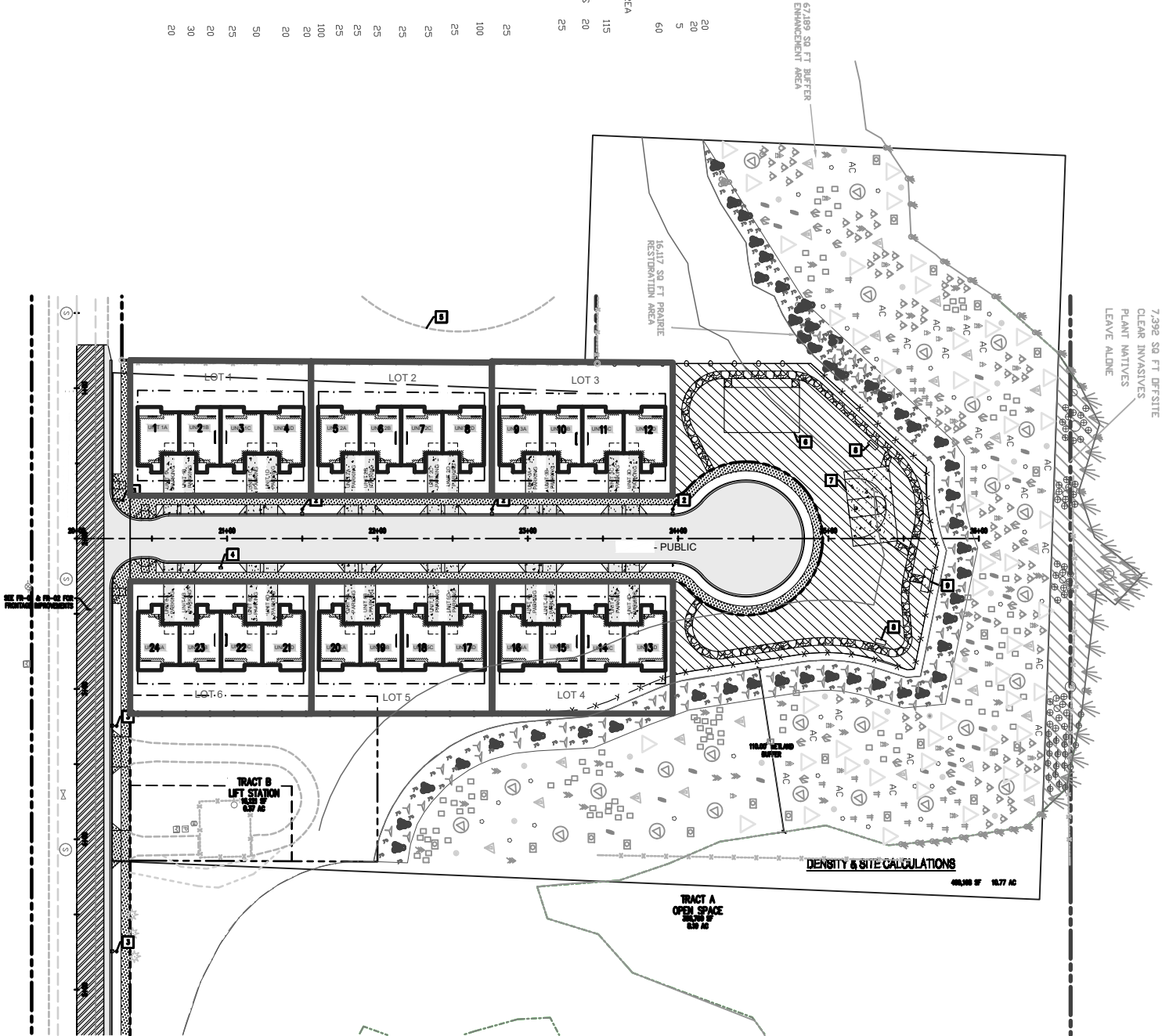
LAND SERVICES NORTHWEST
120 STATE AVE NE #190
OLYMPIA, WA 98501
360-481-4208



Figure 6
SITE RESTORATION
PLANTING PLAN
(NOT A SURVEY)

Scale: 1" = 100'

- | | |
|--------------------------|-----|
| PLANT AND LEAVE | |
| CORNUS SERICEA | 20 |
| Salix lasioandra | 20 |
| QUERCUS GARRYANA | 5 |
| SYMPHORICARPUS ALBA | 60 |
| PRAIRIE RESTORATION AREA | |
| QUAMASH CANADENSIS | 115 |
| RANUNCULUS OCCIDENTALIS | 20 |
| Lupinus polyphylus | 25 |
| BUFFER RESTORATION | |
| AMLANCHER ALNIFOLIA | 25 |
| GALTHERIA SHALLON | 100 |
| RIEBS SANGUINUM | 25 |
| RUBUS SPECTABILIS | 25 |
| HOLDISCUS DISCOLOR | 25 |
| MALUS FUSCA | 25 |
| VACINIUM OVATUM | 25 |
| RUBUS PARVIFLORUM | 25 |
| MAHONIA NERVOSA | 100 |
| ABIES PROCERA | 20 |
| PINUS SITCHENSIS | 20 |
| TSUGA HETEROPHYLLA | 50 |
| FRUNUS EMARGINATA | 25 |
| ACER CIRCINATUM | 20 |
| DEMILERIA CERASTIFORMIS | 30 |
| Salix lasioandra | 20 |



9.5 Monitoring Plan

The planting plan will be monitored for 10 years following the as – built (Year 0). Monitoring of the performance standards will be provided each spring, shortly after leafing out, to aid in plant identification. A report that communicates the findings will be provided to the City staff a month following the monitoring.

The report will contain pictures from photo points established during the as built to allow the City personnel to evaluate site conditions and performance standards. The photos in the report will be taken in four cardinal directions, unless there is a direction that provides a better view. Four photo points that will be established during the as-built (Year 0). Management of performance deficiencies or maintenance will occur during the spring or fall season following monitoring and a summary of management actions will be included in the following year's monitoring report to track effectiveness and adaptively manage the site.

9.6 Performance Standards

The performance standards are as follows:

Year 0 an inventory of plants and photo points will be established for monitoring during the monitoring period within 1 month of the installation.

Year 1-2 will have 100% survival of installed plants. Noxious weeds will be less than 10% aerial coverage.

Volunteer trees or shrubs may account for up to 10 percent of the overall count of surviving plants. Dead plants will be replaced in kind unless a volunteer is a replacement.

Year 2 -10 will have a survival rate of 80 percent of the original count. Volunteers can account for 10 percent of the total if present. Noxious weeds such as Himalayan blackberry, scotch broom, Reed canary grass, and other invasives will not have more than 10 percent aerial coverage of the planting area.

If the area meets the survival and aerial coverage performance measure in year five. The applicant can be given approval to end monitoring.

Japanese knotweed, yellow flag iris, or hogweed will have a zero percent tolerance and be removed or sprayed using an appropriate herbicide approved for aquatic use by a licensed applicator.

The aerial coverage will be 70% by year 5, 80% by year seven and 90% by year 10. If these coverage measures are not met, and it does not appear that they will meet performance measures because of neglect, more plants may be planted to make up the difference.

Failure to meet standards by year 10 will require an additional year of monitoring.

9.7 Contingency Plans

If the site does not meet performance standards. Contingencies may be developed to adapt to the site-specific conditions. Contingencies may include:

- Increased watering

- Mulching
- Integrated Pest Management
- Microtopography changes
- Species substitution
- Herbivory protection
- Bark wrap

The area is frequented by deer and the choice of plants were chosen to avoid herbivory issues, but exclusion fencing may be necessary until the plants reach maturity. This is not expected to be needed to be a permanent fixture if required. Any contingencies will be developed in conjunction with landscapers, nursery staff, and other experts. The city would be notified in advance of the contingency plans. No contingencies will be applied without city consent.

9.6 Performance Bonds and Demonstration of Competence.

A demonstration of financial resources, administrative, supervisory, and technical competence and scientific expertise of sufficient standing to successfully execute the compensation project shall be provided. A compensation project manager shall be named and the qualifications of each team member involved in preparing the rehabilitation plan and implementing and supervising the project shall be provided, including educational background and areas of expertise, training and experience with comparable projects. In addition, bonds ensuring the fulfillment of the compensation project, monitoring program, and any contingency measure shall be posted pursuant to TMC 16.28.210 in the amount of one hundred twenty percent of the expected cost of compensation.

The applicant will provide a bond for the fulfillment, monitoring program, contingency measures in the amount of one hundred twenty percent of the expected cost which is given in this report.

The funds are to comply with the surety provisions in Tumwater code.

10.0 SUMMARY AND CONCLUSIONS

The project proposes a 6 lot quad unit multifamily subdivision with roads, sewer, water, utilities, parking and waste facilities.

Two wetlands were identified within 315 feet of the subject property.

Wetland A is a Category II wetland maintaining a 150-foot-high intensity land use buffer. This buffer can be reduced to the 110-foot moderate intensity land use buffer using the mitigation measures in the Table 16.28.170(5): Measures to Minimize Impacts to Wetlands.

Wetland B is a Category III 150-foot-high intensity land use buffer. This buffer can be reduced to the 110-foot moderate intensity land use buffer using the mitigation measures in the Table 16.28.170(5).

A wetland and prairie rehabilitation that will go beyond the requirements for wetland buffer impacts due to the project has been provided to meet the conditions for a PUD project. The project will create a new prairie and wetland buffer that will be educational and improve overall ecological functions in the

area while providing a unique opportunity to restore south sound prairie for the endangered Taylor checkerspot butterfly and Mardon skipper butterfly. The plantings will improve food cover, structure and diversity.

No impacts to wetlands is proposed, and the applicant will provide a robust rehabilitation with wetland and prairie enhancement in order to improve the habitat and wetland functions. Tumwater will soon have a property that can sustainably exist in concert with the nearby critical areas, without impacting wetland functions to the benefit of the citizens of the City of Tumwater.

11.0 LIMITATIONS

This report was created with care and best professional judgment using the current best available science, but the report is subject to interpretation by local state and federal regulators who have the final regulatory authority on wetlands and other boundary determinations. No outcomes are warranted by this report.

12.0 REFERENCE

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Appendix A – Photographs

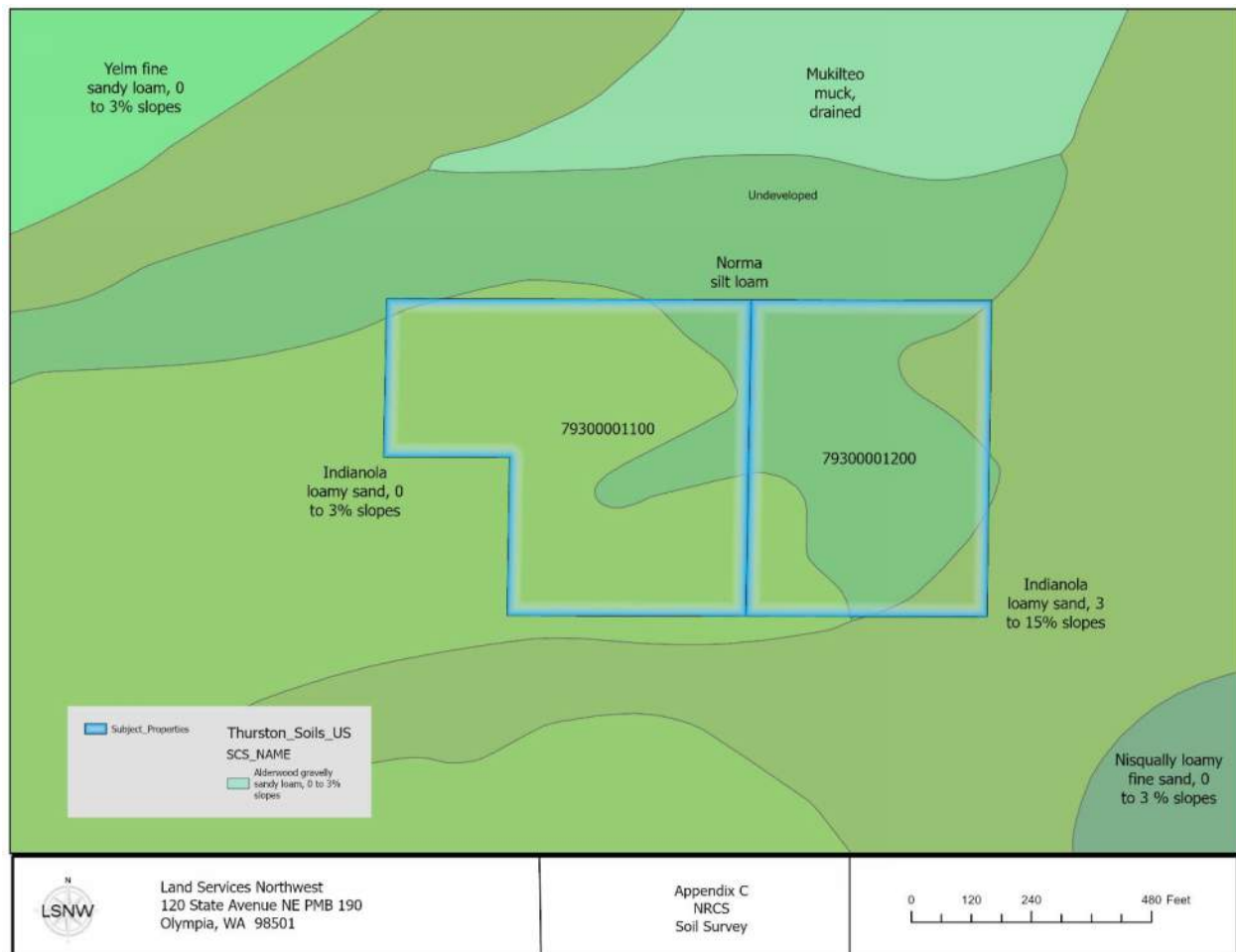




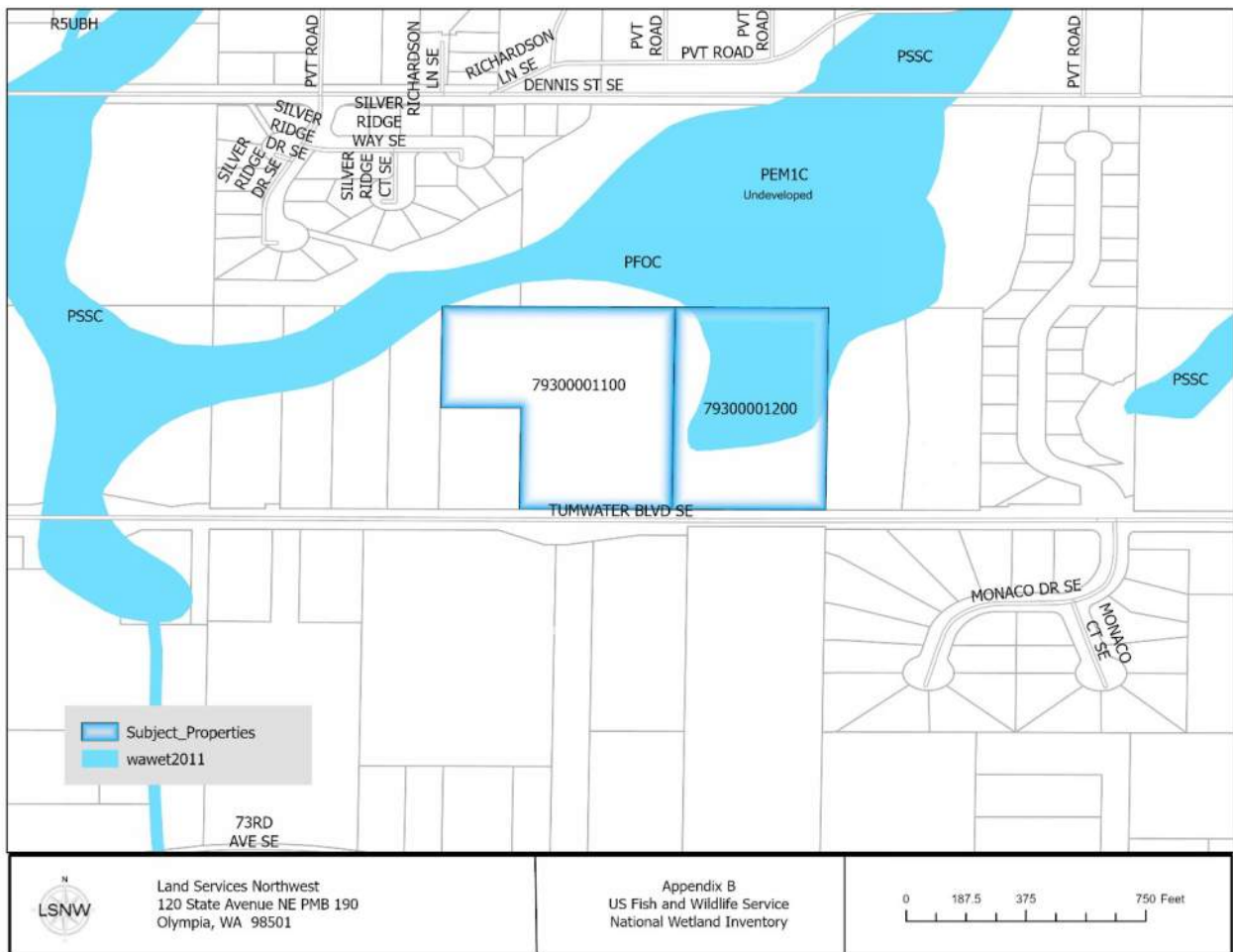




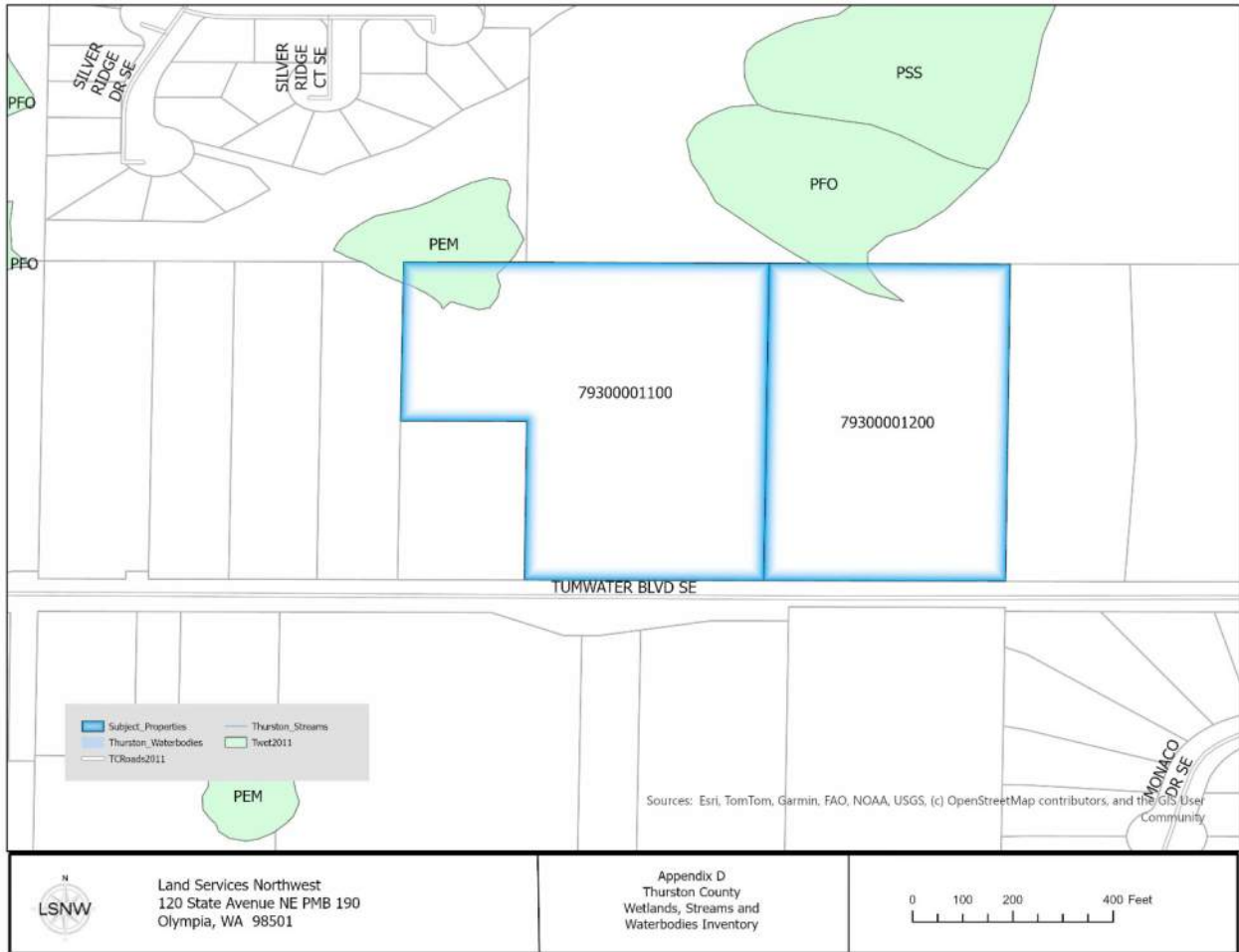
Appendix B - U.S. Fish and Wildlife Service NWI MAP



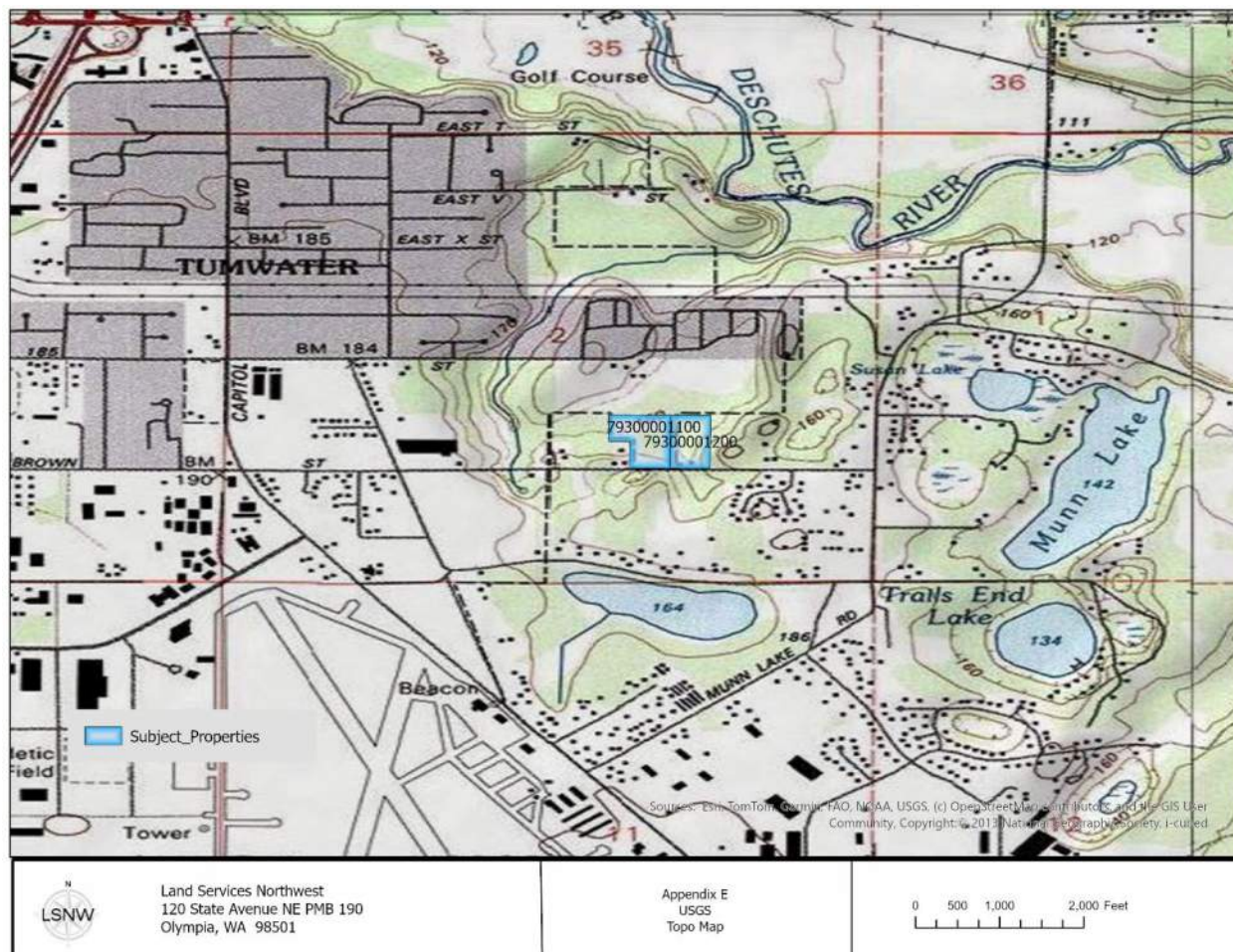
Appendix C - NRCS Soil Survey Map for Thurston County



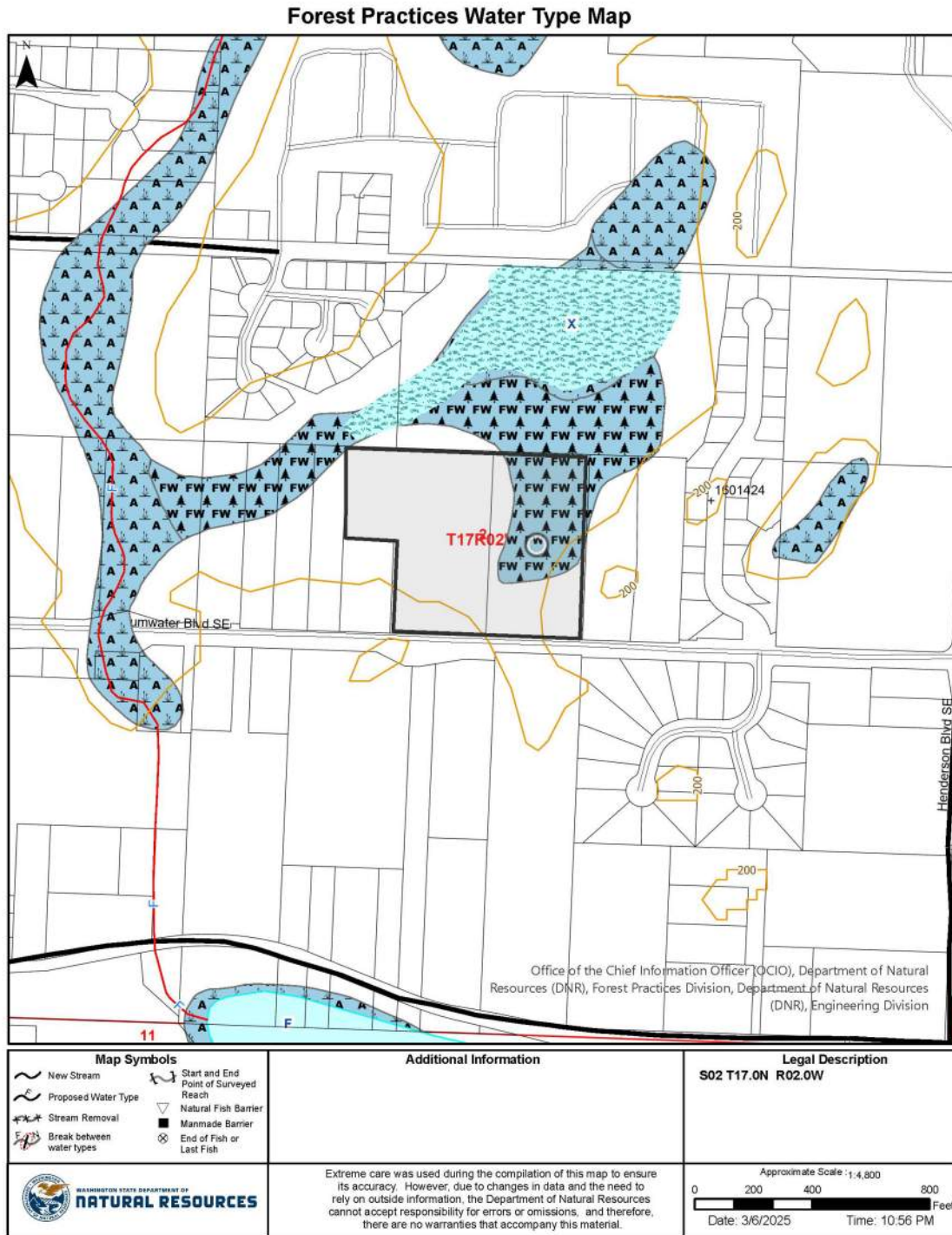
Appendix D - Thurston County Stream and Wetland inventory



Appendix E – USGS 7.5 Minute Topographic Map



Appendix F – WADNR Forest Practices Stream Type Map

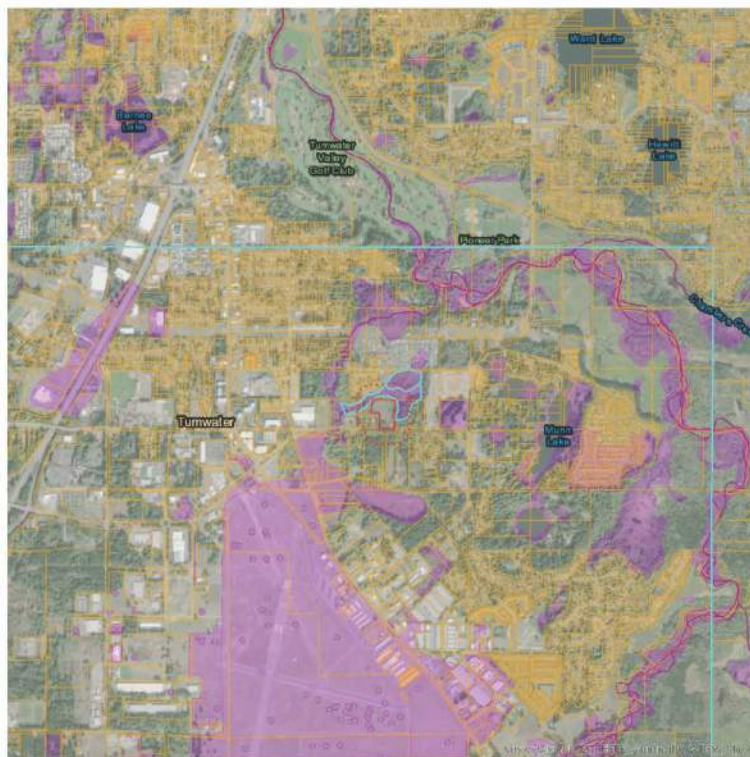


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PHS Report



Priority Habitats and Species on the Web



Report Date: 05/13/2024, Parcel ID: [79300001100](#)

Occurrence Name	Federal Status	State Status	Sensitive Location
Freshwater Emergent Wetland	N/A	N/A	No
Freshwater Forested/Shrub Wetland	N/A	N/A	No
Big brown bat			Yes
myotis spp			Yes
Townsend's Big-eared Bat		Candidate	Yes

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PHS Report

Freshwater Emergent Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Freshwater Emergent Wetland - NWI Code: PEM1C
Source Dataset	NW/Wetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html
Geometry Type	Polygons

Freshwater Forested/Shrub Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Freshwater Forested/Shrub Wetland - NWI Code: PFOC
Source Dataset	NW/Wetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html
Geometry Type	Polygons

Big brown bat	
Scientific Name	<i>Eptesicus fuscus</i>
Notes	This polygon mask represents one or more records of the above species or habitat occurrence. Contact PHS Data Release at phsproducts@dfw.wa.gov for obtaining information about masked sensitive species and habitats.
PHS Listing Status	PHS Listed Occurrence
Sensitive	Y
Display Resolution	TOWNSHIP
ManagementRecommendations	http://wdfw.wa.gov/publications/pub.php?id=00605

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PHS Report

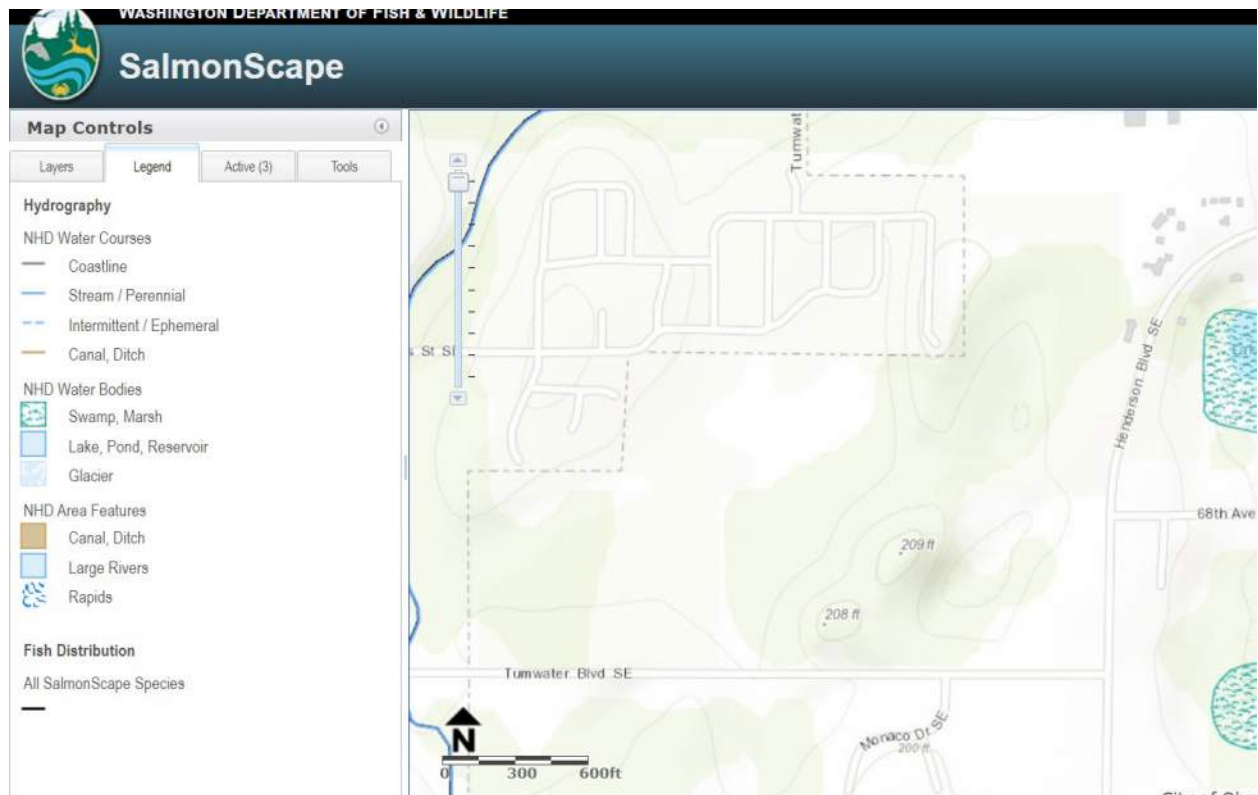
myotis spp	
Scientific Name	<i>Myotis yumanensis/lucifugus</i>
Notes	This polygon mask represents one or more records of the above species or habitat occurrence. Contact PHS Data Release at phsproducts@dfw.wa.gov for obtaining information about masked sensitive species and habitats.
PHS Listing Status	PHS Listed Occurrence
Sensitive	Y
Display Resolution	TOWNSHIP

Townsend's Big-eared Bat	
Scientific Name	<i>Corynorhinus townsendii</i>
Notes	This polygon mask represents one or more records of the above species or habitat occurrence. Contact PHS Data Release at phsproducts@dfw.wa.gov for obtaining information about masked sensitive species and habitats.
State Status	Candidate
PHS Listing Status	PHS Listed Occurrence
Sensitive	Y
SGCN	Y
Display Resolution	TOWNSHIP
ManagementRecommendations	http://wdfw.wa.gov/publications/pub.php?id=00027

DISCLAIMER: This report includes information that the Washington Department of Fish and Wildlife (WDFW) maintains in a central computer database. It is not an attempt to provide you with an official agency response as to the impacts of your project on fish and wildlife. This information only documents the location of fish and wildlife resources to the best of our knowledge. It is not a complete inventory and it is important to note that fish and wildlife resources may occur in areas not currently known to WDFW biologists, or in areas for which comprehensive surveys have not been conducted. Site specific surveys are frequently necessary to rule out the presence of priority resources. Locations of fish and wildlife resources are subject to variation caused by disturbance, changes in season and weather, and other factors. WDFW does not recommend using reports more than six months old.

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Appendix H - USACE WMVC Soil Data Sheets

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Tenino Land Company City/County: Tumwater/Thurston Sampling Date: 5.8.24
 Applicant/Owner: Tenino Land Company State: WA Sampling Point: TP1
 Investigator(s): Alex Callender Section, Township, Range: 02172W
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR): 2 Lat: _____ Long: _____ Datum: Wgs84
 Soil Map Unit Name: Indianola NWI classification: _____
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Yes ☒ 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Remarks:		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. <u>Thuja plicata</u>	25	Y	FAC	
2. _____				
3. _____				
4. _____				
25 = Total Cover				
Sapling/Shrub Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	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 = _____
1. <u>Rubus spectabilis</u>	10	Y	FAC	
2. _____				
3. _____				
4. _____				
5. _____				
10 = Total Cover				
Herb Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Lysichiton americanus</u>	25	Y	OBL	
2. <u>Athyrium cyclosorum</u>	20	Y	FAC	
3. <u>Equisetum arvense</u>	3	N	FAC	
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
47 = Total Cover				
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
1. _____				
2. _____				
= Total Cover				
% Bare Ground in Herb Stratum _____				
Remarks: 100% of dominant vegetation is FAC or wetter.				

SOIL

Sampling Point: TP1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-16	10YR2/1	100					Sandy loam	
16-18	10YR4/2	85	10YR4/6	15			Sandy loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if present): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Remarks: Hydric soil F3 indicator present.

HYDROLOGY

Wetland Hydrology Indicators:				Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)					
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)			
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)			
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)			
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)			
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)			
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)			
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> FAC-Neutral Test (D5)			
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)			
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)			
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)					
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)					

Field Observations: Surface Water Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____				Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Hydro at surface.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Tenino Land Company City/County: Tumwater/Thurston Sampling Date: 8.16.24
 Applicant/Owner: Tenino Land Company State: WA Sampling Point: TP1A
 Investigator(s): Alex Callender Section, Township, Range: 02172W
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR): 2 Lat: _____ Long: _____ Datum: Wgs84
 Soil Map Unit Name: Indianola NWI classification: _____
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ 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 <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Remarks:			

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. <u>Thuja plicata</u>	35	Y	FAC	
2. <u>Alnus rubra</u>	55	Y	FAC	
3. _____				
4. _____				
		90	= Total Cover	
Sapling/Shrub Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	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 = _____
1. <u>Rubus spectabilis</u>	25	Y	FAC	
2. _____				
3. _____				
4. _____				
5. _____				
		25	= Total Cover	
Herb Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Lysichiton americanus</u>	20	Y	OBL	
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
		20	= Total Cover	
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
1. _____				
2. _____				
			= Total Cover	
% Bare Ground in Herb Stratum _____				
Remarks: Greater than 50% of dominant vegetation is FAC or wetter.				

SOIL

Sampling Point: TP1A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features			Texture	Remarks	
	Color (moist)	%	Color (moist)	%	Type ¹			
0-2	10YR2/1	100					Silt loam	
2-20	10YR6/2	90	10YR6/8	10			Silt loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if present): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Remarks: Depleted matrix present.

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)				
<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/>	Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/>	Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/>	Salt Crust (B11)	<input type="checkbox"/>	Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/>	Aquatic Invertebrates (B13)	<input type="checkbox"/>	Dry-Season Water Table (C2)
<input checked="" type="checkbox"/> Water Marks (B1)	<input type="checkbox"/>	Hydrogen Sulfide Odor (C1)	<input type="checkbox"/>	Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/>	Oxidized Rhizospheres along Living Roots (C3)	<input checked="" type="checkbox"/>	Geomorphic Position (D2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/>	Presence of Reduced Iron (C4)	<input type="checkbox"/>	Shallow Aquitard (D3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/>	Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/>	FAC-Neutral Test (D5)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/>	Stunted or Stressed Plants (D1)	<input type="checkbox"/>	Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/>	Other (Explain in Remarks)	<input type="checkbox"/>	Frost-Heave Hummocks (D7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)				
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)				

Field Observations: Surface Water Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
--	---

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Water-stained leaves present. **Hydro at surface**

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Tenino Land Company City/County: Tumwater/Thurston Sampling Date: 8.16.24
 Applicant/Owner: Tenino Land Company State: WA Sampling Point: TP1B
 Investigator(s): Alex Callender Section, Township, Range: 02172W
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR): 2 Lat: _____ Long: _____ Datum: Wgs84
 Soil Map Unit Name: Indianola NWI classification: _____
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Yes ☒ 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 <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Wetland Hydrology Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Remarks:		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50</u> (A/B)
1. <u>Acer circinatum</u>	35	Y	FAC	
2. <u>Thuja plicata</u>	25	Y	FAC	
3. _____				
4. _____				
<u>60</u> = Total Cover				
Sapling/Shrub Stratum (Plot size: _____)				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species <u>60</u> x 3 = <u>180</u> FACU species <u>60</u> x 4 = <u>240</u> UPL species _____ x 5 = _____ Column Totals: <u>120</u> (A) <u>420</u> (B) Prevalence Index = B/A = <u>3.5</u>
1. _____				
2. _____				
3. _____				
4. _____				
<u> </u> = Total Cover				
Herb Stratum (Plot size: _____)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Gaultheria shallon</u>	35	Y	FACU	
2. <u>Rubus ursinus</u>	25	Y	FACU	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
<u>60</u> = Total Cover				
Woody Vine Stratum (Plot size: _____)				Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
1. _____				
2. _____				
<u> </u> = Total Cover				
% Bare Ground in Herb Stratum _____				
Remarks: Less than 50% of dominant vegetation is FAC or wetter.				

SOIL

Sampling Point: TP1B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features			Texture	Remarks	
	Color (moist)	%	Color (moist)	%	Type ¹			Loc ²
0-4	10YR3/2	100					Fine sand	
4-14	10YR4/3	100					Fine sand	
14-18	10YR4/2	100					Fine sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if present): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
--	---

Remarks: No hydric soil indicators present.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)
Primary Indicators (minimum of one required; check all that apply)		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		

Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
--	---

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No wetland hydrology indicators present.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Tenino Land Company City/County: Tumwater/Thurston Sampling Date: 5.8.24
 Applicant/Owner: Tenino Land Company State: WA Sampling Point: TP2
 Investigator(s): Alex Callender Section, Township, Range: 02172W
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR): 2 Lat: _____ Long: _____ Datum: Wgs84
 Soil Map Unit Name: Indianola NWI classification: _____
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Yes ☒ 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 <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Wetland Hydrology Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Remarks:		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>33</u> (A/B)
1. <u>Tsuga heterophylla</u>	95	Y	FACU	
2. <u>Acer circinatum</u>	5	N	FAC	
3. _____				
4. _____				
		100 = Total Cover		Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species <input type="checkbox"/> x 1 = <input type="checkbox"/> FACW species <input type="checkbox"/> x 2 = <input type="checkbox"/> FAC species <input type="checkbox"/> x 3 = <input type="checkbox"/> FACU species <input type="checkbox"/> x 4 = <input type="checkbox"/> UPL species <input type="checkbox"/> x 5 = <input type="checkbox"/> Column Totals: <input type="checkbox"/> (A) <input type="checkbox"/> (B) Prevalence Index = B/A = <input type="checkbox"/>
Sapling/Shrub Stratum (Plot size: _____)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
		= Total Cover		
Herb Stratum (Plot size: _____)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Polystichum munitum</u>	10	Y	FACU	
2. <u>Maianthemum dilatatum</u>	10	Y	FAC	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
		20 = Total Cover		
Woody Vine Stratum (Plot size: _____)				Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
1. _____				
2. _____				
		= Total Cover		
% Bare Ground in Herb Stratum _____				
Remarks: Less than 50% of dominant vegetation is FAC or wetter.				

SOIL

Sampling Point: TP2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	Organic	100						
2-16	10YR4/3	100					Sandy loam	
16-18	10YR4/2	100					Sandy loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if present): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
--	---

Remarks: No hydric soil indicators present.

HYDROLOGY

Wetland Hydrology Indicators:				Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)					
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/>
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Drainage Patterns (B10)	<input type="checkbox"/>
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/>
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	<input type="checkbox"/>
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Geomorphic Position (D2)	<input type="checkbox"/>
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Shallow Aquitard (D3)	<input type="checkbox"/>
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> FAC-Neutral Test (D5)	<input type="checkbox"/>
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)	<input type="checkbox"/>
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Frost-Heave Hummocks (D7)	<input type="checkbox"/>
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)					
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)					

Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
--	---

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No wetland hydrology indicators present.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Tenino Land Company City/County: Tumwater/Thurston Sampling Date: 5.8.24
 Applicant/Owner: Tenino Land Company State: WA Sampling Point: TP3
 Investigator(s): Alex Callender Section, Township, Range: 02172W
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR): 2 Lat: _____ Long: _____ Datum: Wgs84
 Soil Map Unit Name: Indianola NWI classification: _____
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Yes ☒ 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes _____ No <input checked="" type="checkbox"/>	
Wetland Hydrology Present?	Yes _____ No <input checked="" type="checkbox"/>	
Remarks:		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>60</u> (A/B)
1. <u><i>Alnus rubra</i></u>	75	Y	FAC	
2. _____				
3. _____				
4. _____				
75 = Total Cover				
Sapling/Shrub Stratum (Plot size: _____)				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 = _____
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
_____ = Total Cover				
Herb Stratum (Plot size: _____)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u><i>Urtica dioica</i></u>	15	Y	FAC	
2. <u><i>Equisetum arvense</i></u>	10	Y	FAC	
3. <u><i>Galium aparine</i></u>	5	Y	FACU	
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
30 = Total Cover				
Woody Vine Stratum (Plot size: _____)				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
1. _____				
2. _____				
_____ = Total Cover				
% Bare Ground in Herb Stratum _____				
Remarks: Greater than 50% of dominant vegetation is FAC or wetter.				

SOIL

Sampling Point: TP3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-16	10YR4/3	100					Sandy loam	
16-18	10YR4/2	100					Sandy loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if present): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
--	---

Remarks: No hydric soil indicators present.

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (2 or more required)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)	
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)			
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)			

Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
--	---

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No wetland hydrology indicators present.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Tenino Land Company City/County: Tumwater/Thurston Sampling Date: 5.8.24
 Applicant/Owner: Tenino Land Company State: WA Sampling Point: TP4
 Investigator(s): Alex Callender Section, Township, Range: 02172W
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR): 2 Lat: _____ Long: _____ Datum: Wgs84
 Soil Map Unit Name: Indianola NWI classification: _____
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Yes ☒ 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Remarks:		

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. _____					
2. _____					
3. _____					
4. _____					
_____ = Total Cover					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 = _____
Sapling/Shrub Stratum (Plot size: _____) 1. <u>Rubus spectabilis</u> 25 Y FAC 2. _____ 3. _____ 4. _____ 5. _____ _____ = Total Cover					
Herb Stratum (Plot size: _____) 1. <u>Athyrium cyclosorum</u> 45 Y FAC 2. <u>Lysichiton americanus</u> 35 Y OBL 3. _____ 4. _____ 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 10. _____ 11. _____ _____ 80 = Total Cover					
Woody Vine Stratum (Plot size: _____) 1. _____ 2. _____ _____ = Total Cover					
% Bare Ground in Herb Stratum _____					
Remarks: 100% of dominant vegetation is FAC or wetter.					Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>					

SOIL

Sampling Point: TP4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-14	10YR2/1	100					Sandy loam	
14-18	10YR4/2	90	10YR4/6	10			Sandy loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if present): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
--	---

Remarks: Hydric soil F3 indicator present.

HYDROLOGY

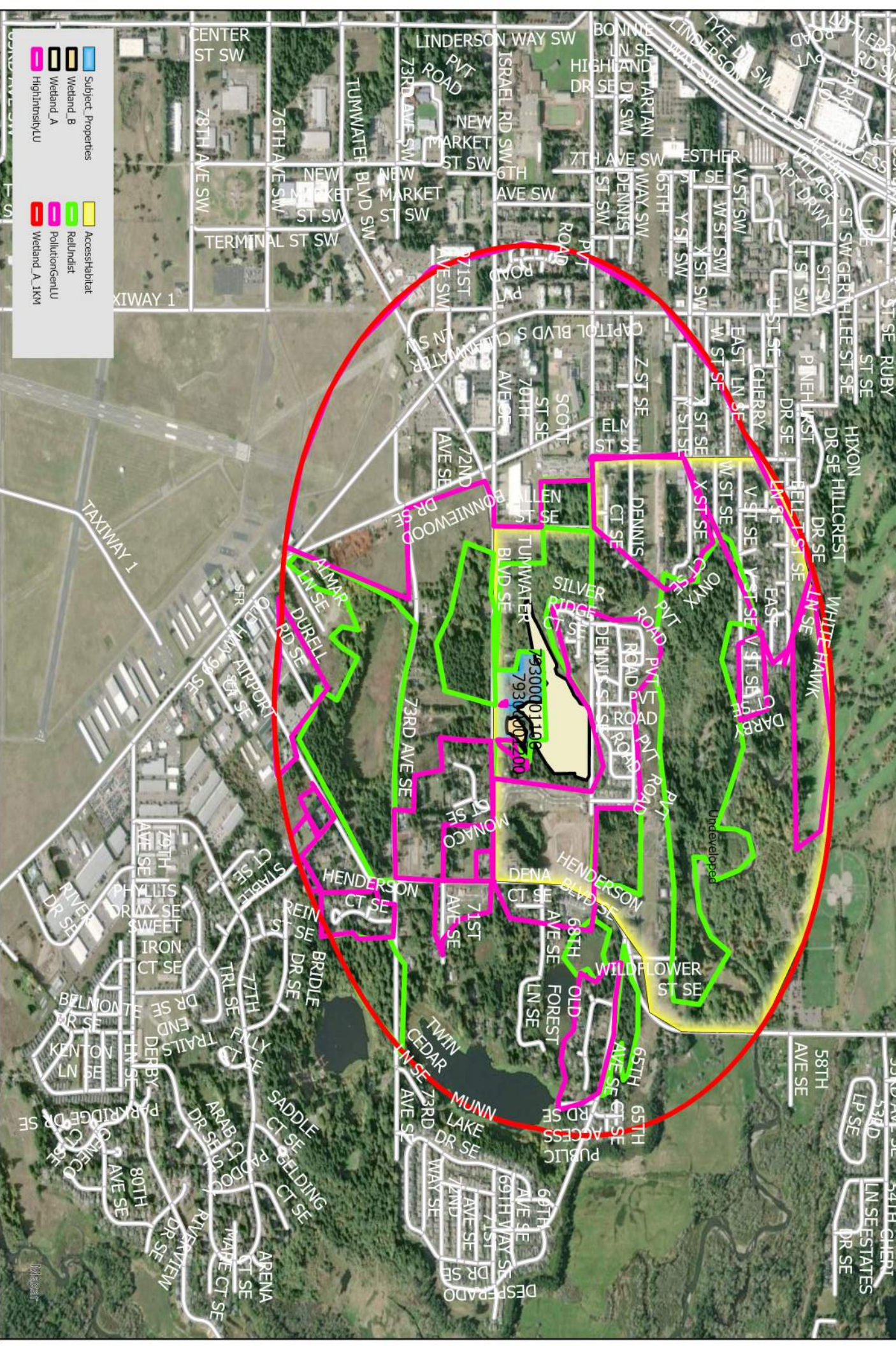
Wetland Hydrology Indicators:				Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)					
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)			
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)			
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)			
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)			
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)			
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)			
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> FAC-Neutral Test (D5)			
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)			
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)			
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)					
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)					

Field Observations: Surface Water Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____				Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
--	--	--	--	---	--

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Hydro at surface.

Appendix I - ECY Wetland Rating Forms for Western Washington



- | | | | |
|---|--------------------|---|------------------|
|  | Subject Properties |  | Access/Habitat |
|  | Wetland_B |  | Re/Undist |
|  | Wetland_A |  | Pollution/CentLU |
|  | HighIntensityLU |  | Wetland_A_1KM |



Land Services Northwest
120 State Avenue NE PMB 190
Olympia, WA 98501

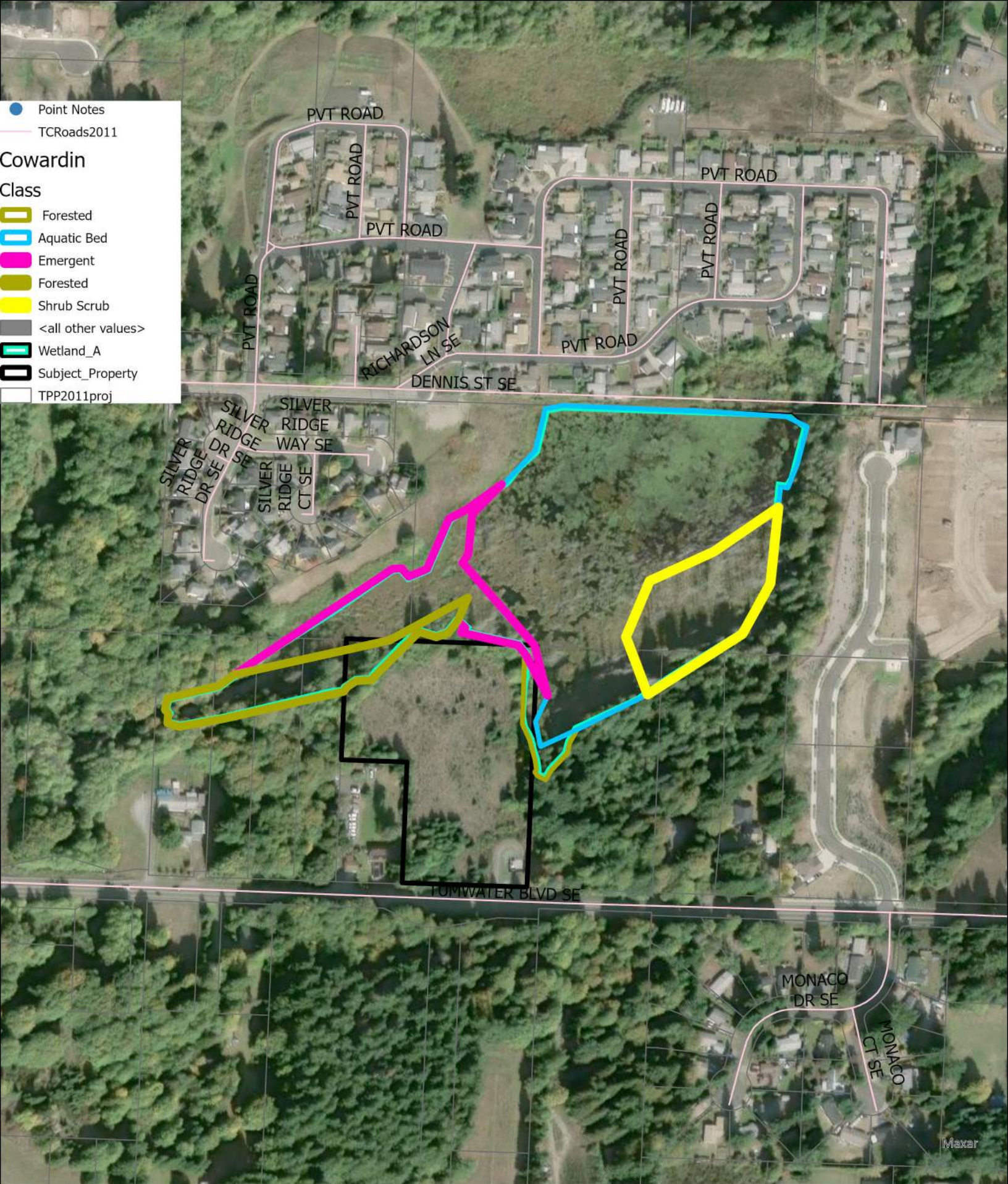
1KM Land Use Intensity Map
Wetland A



Land Use Calculations

	ACRES	%	
1KM	874		
Wetland A	2.19		
1KM-Wetland A	871.81	100	
High Intensity	36	0.041293	4.12934
Relatively Undisturbed	415	0.476021	47.60212
Low Medium Use	423	0.485197	48.51975

Accessible Habitat	848		
Wetland A	2.19	0.002583	0.258255
Accessible-WetA	845.81	0.970177	97.0177
RU	135	0.154462	15.44622
Low/Medium LU	677	0.776545	77.65453
High Intensity	36	0.041293	4.12934





Seasonally Flooded

Permanently Flooded

SILVER
RIDGE
DR SE
DR SE

SILVER
RIDGE
CT SE

SILVER RIDGE WAY SE

PVT ROAD

RICHARDSON
LN SE

RICHARDSON
LN SE

DENNIS ST SE

PVT ROAD

PVT ROAD

PVT ROAD

Land Services Northwest
120 State Avenue NE PMB 190
Olympia, WA 98501
360-481-4208

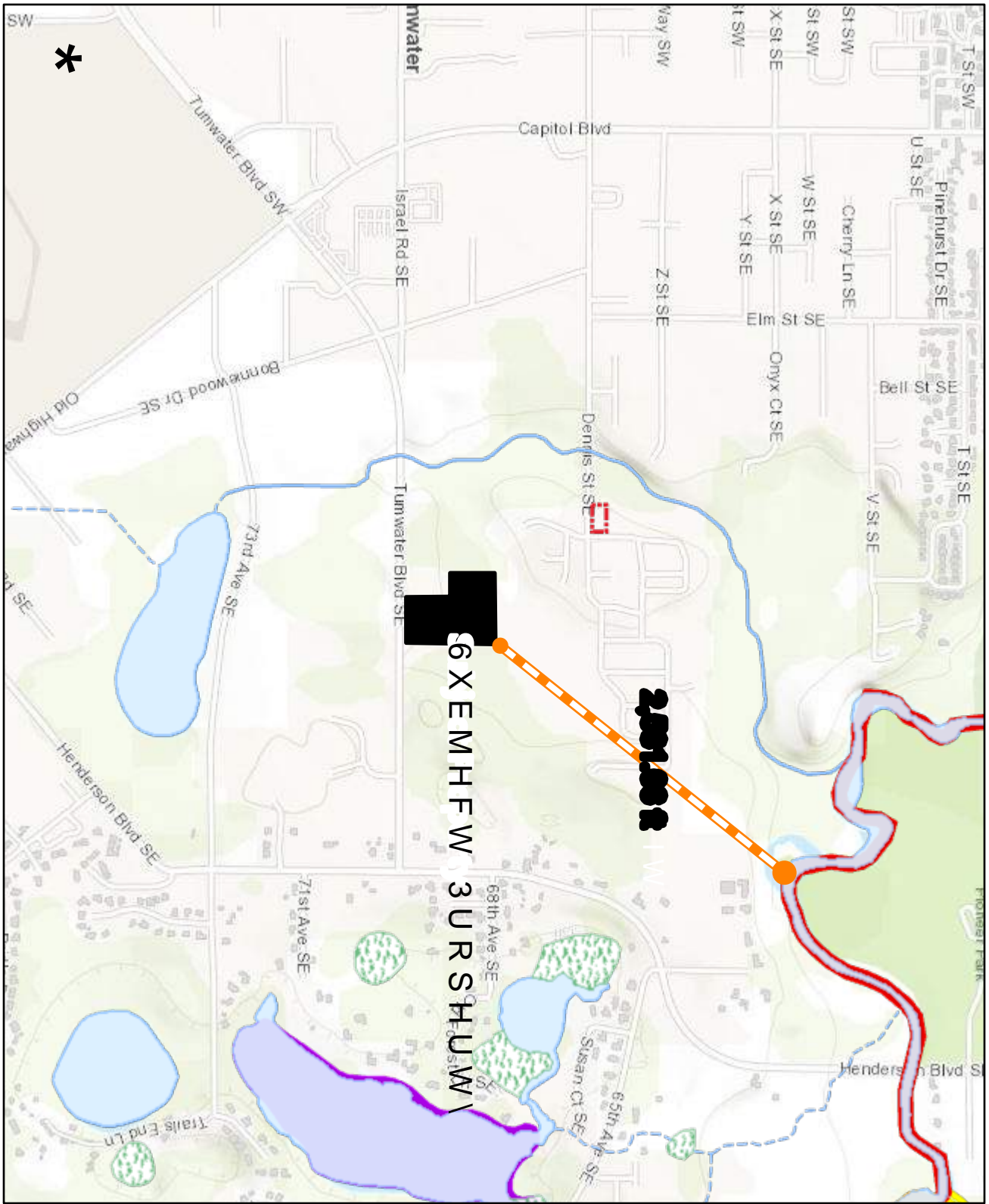


Hydroperiod
Classification
Map

0 50 100 200 Feet

TENINO LAND CO

G : DWHU 4XDOLW\ \$WODV ODS



\$VVHVHG : DWHU 6

: DWHU
& DWHJRU
& DWHJRU
& DWHJRU
& DWHJRU
& DWHJRU
& DWHJRU

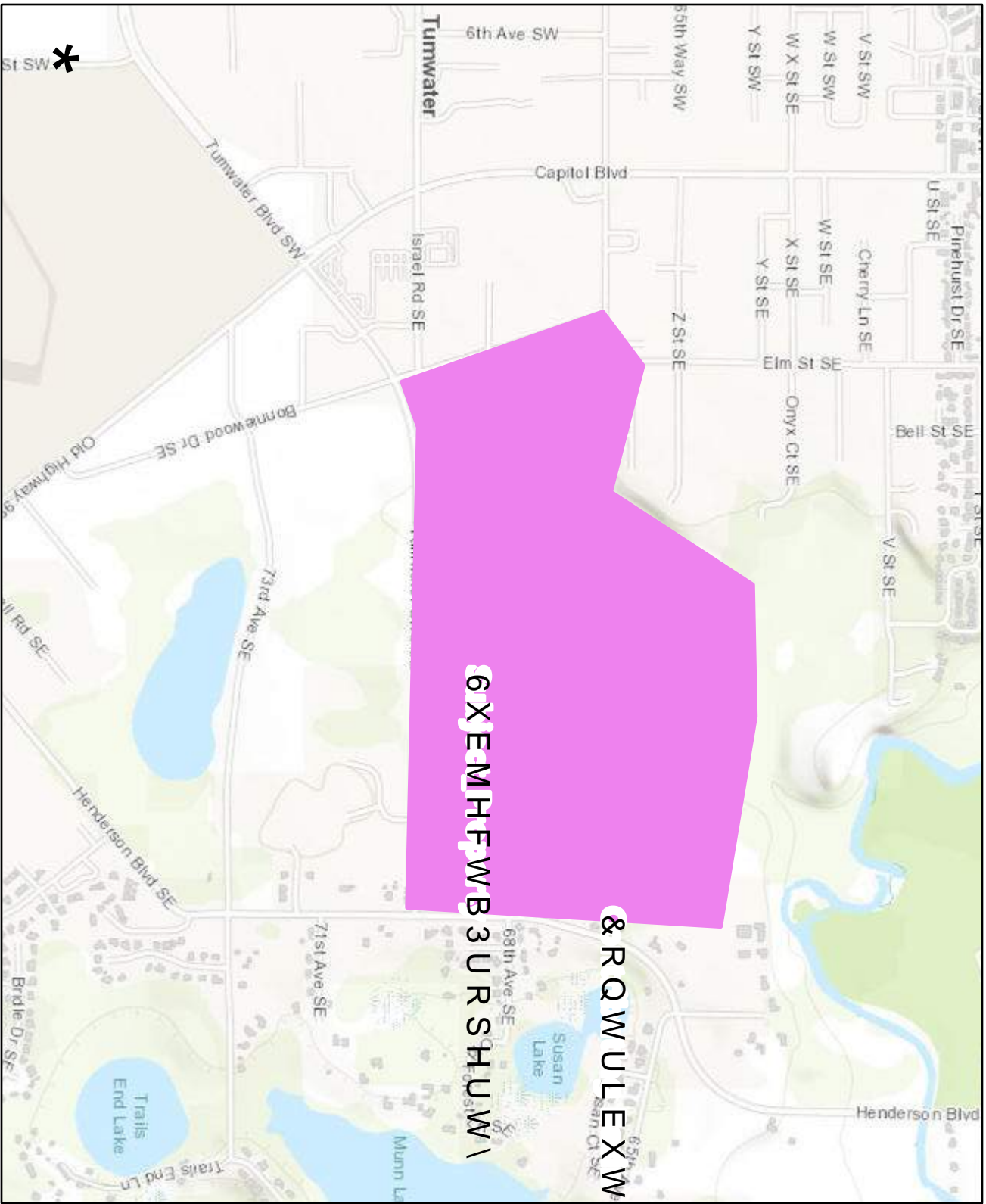
6HGLPHQW
& DWHJRU
& DWHJRU
& DWHJRU
& DWHJRU
& DWHJRU
& DWHJRU
& DWHJRU

G

& LWLHV
& LW\ OLPWV
3DUFHOV
3DUFHO ERXQGDUI

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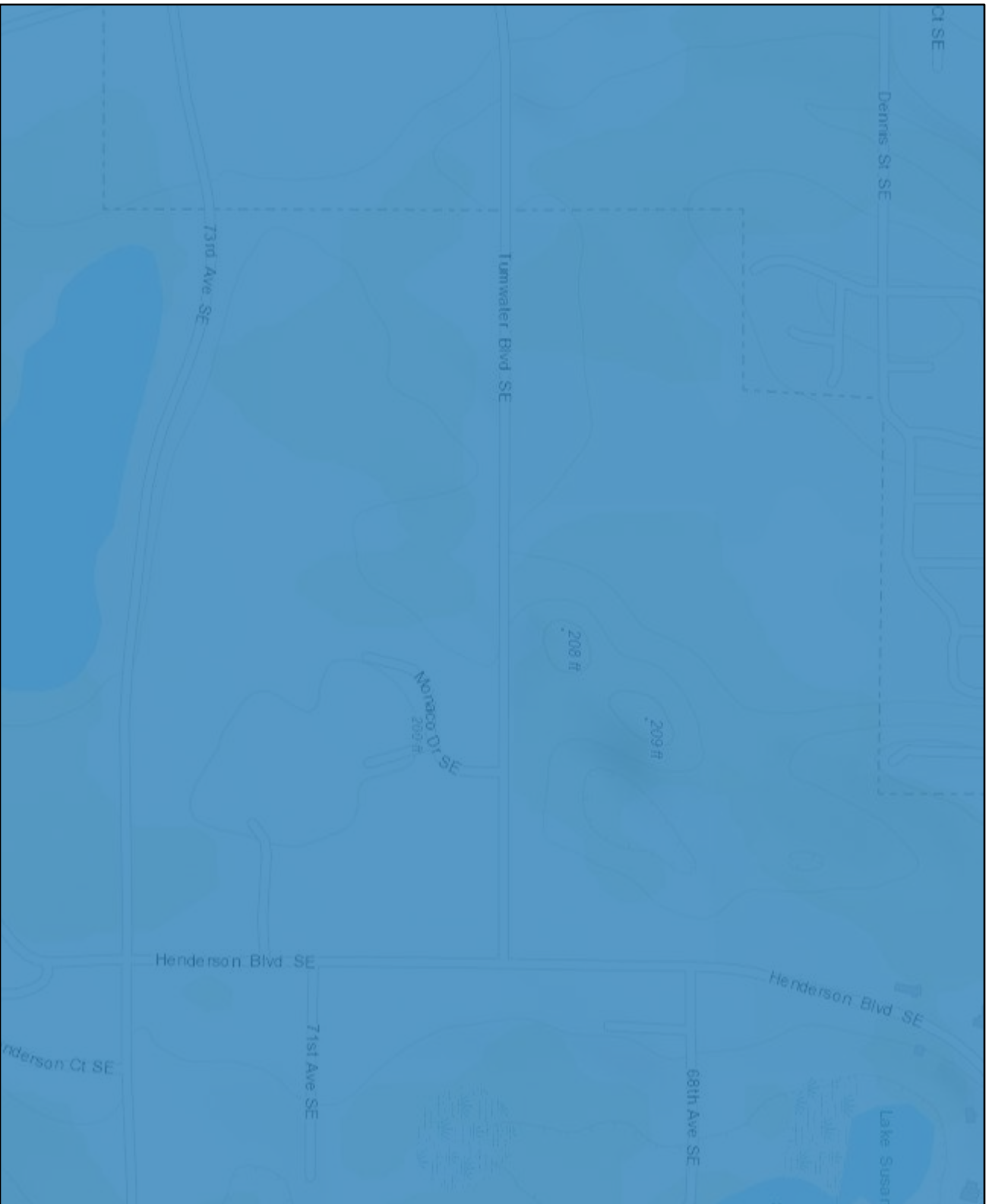


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0 L Q W

Wetland name or number A

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland A Tumwater Boulevard Date of site visit: 5.8.24

Rated by Alex Callender Trained by Ecology? X Yes ___ No ___ Date of training 12.13

HGM Class used for rating Depression Wetland has multiple HGM classes? ___ Y X ___ N

NOTE: Form is not complete without the required figures (figures can be combined).

Source of base aerial photo/map 2024 Esri Aerial

OVERALL WETLAND CATEGORY 11 (based on functions X or special characteristics ___)

1. Category of wetland based on FUNCTIONS

___ **Category I** – Total score = 23 - 27

X **Category II** – Total score = 20 - 22

___ **Category III** – Total score = 16 - 19

___ **Category IV** – Total score = 9 - 15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
Circle the appropriate ratings				
Site Potential	H <input checked="" type="checkbox"/> L	H <input checked="" type="checkbox"/> L	H <input checked="" type="checkbox"/> L	
Landscape Potential	H <input checked="" type="checkbox"/> L	H <input checked="" type="checkbox"/> L	H <input checked="" type="checkbox"/> L	
Value	<input checked="" type="checkbox"/> M L	H <input checked="" type="checkbox"/> L	<input checked="" type="checkbox"/> M L	TOTAL
Score Based on Ratings	7	6	7	20

**Score for each
function based
on three
ratings**
(order of ratings
is not important)

9 = H, H, H

8 = H, H, M

7 = H, H, L

7 = H, M, M

6 = H, M, L

6 = M, M, M

5 = H, L, L

5 = M, M, L

4 = M, L, L

3 = L, L, L

2. Category based on SPECIAL CHARACTERISTICS of wetland

CHARACTERISTIC	CATEGORY
Estuarine	I II
Wetland of High Conservation Value	I
Bog	I
Mature Forest	I
Old Growth Forest	I
Coastal Lagoon	I II
Interdunal	I II III IV
None of the above	X

Wetland name or number A

Maps and figures required to answer questions correctly for Western Washington

Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	D 1.3, H 1.1, H 1.4	Cowardin
Hydroperiods	D 1.4, H 1.2	Hydro
Location of outlet (<i>can be added to map of hydroperiods</i>)	D 1.1, D 4.1	Outlet
Boundary of area within 150 ft of the wetland (<i>can be added to another figure</i>)	D 2.2, D 5.2	150 ft
Map of the contributing basin	D 4.3, D 5.3	303d
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and total habitat	H 2.1, H 2.2, H 2.3	1km
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	303d
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	

Riverine Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Ponded depressions	R 1.1	
Boundary of area within 150 ft of the wetland (<i>can be added to another figure</i>)	R 2.4	
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	
Width of unit vs. width of stream (<i>can be added to another figure</i>)	R 4.1	
Map of the contributing basin	R 2.2, R 2.3, R 5.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and total habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	R 3.2, R 3.3	

Lake Fringe Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	L 1.1, L 4.1, H 1.1, H 1.4	
Plant cover of trees, shrubs, and herbaceous plants	L 1.2	
Boundary of area within 150 ft of the wetland (<i>can be added to another figure</i>)	L 2.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and total habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	L 3.1, L 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	L 3.3	

Slope Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Plant cover of dense trees, shrubs, and herbaceous plants	S 1.3	
Plant cover of dense, rigid trees, shrubs, and herbaceous plants (<i>can be added to figure above</i>)	S 4.1	
Boundary of 150 ft buffer (<i>can be added to another figure</i>)	S 2.1, S 5.1	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and total habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	S 3.3	

HGM Classification of Wetlands in Western Washington

For questions 1-7, the criteria described must apply to the entire unit being rated.

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides except during floods?

☐ **NO** – go to 2

YES – the wetland class is **Tidal Fringe** – go to 1.1

- 1.1 Is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?

☐ **NO** – **Saltwater Tidal Fringe (Estuarine)**

YES – **Freshwater Tidal Fringe**

If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is Saltwater Tidal Fringe, it is an **Estuarine** wetland and is not scored. This method **cannot** be used to score functions for estuarine wetlands.

2. The entire wetland unit is flat, and precipitation is the only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.

☐ **NO** – go to 3

YES – The wetland class is **Flats**

If your wetland can be classified as a Flats wetland, use the form for **Depressional** wetlands.

3. Does the entire wetland unit **meet all** of the following criteria?

___ The vegetated part of the wetland is on the shores of a body of permanent open water (without any plants on the surface at any time of the year) at least 20 ac (8 ha) in size,

___ At least 30% of the open water area is deeper than 6.6 ft (2 m).

☐ **NO** – go to 4

YES – The wetland class is **Lake Fringe** (Lacustrine Fringe)

4. Does the entire wetland unit **meet all** of the following criteria?

___ The wetland is on a slope (slope can be very gradual),

___ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps.

It may flow subsurface, as sheet flow, or in a swale without distinct banks,

___ The water leaves the wetland **without being impounded**.

☐ **NO** – go to 5

YES – The wetland class is **Slope**

NOTE: Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 ft deep).

Wetland name or number A

5. Does the entire wetland unit **meet all** of the following criteria?

____ The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river,
____ The overbank flooding occurs at least once every 2 years.

NO – go to 6

YES – The wetland class is **Riverine**

NOTE: The Riverine unit can contain depressions that are filled with water when the river is not flooding

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time during the year? This means that any outlet, if present, is higher than the interior of the wetland.

NO – go to 7

YES – The wetland class is **Depressional**

7. Is the entire wetland unit located in a very flat area with no obvious depression and no overbank flooding? The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched but has no obvious natural outlet.

NO – go to 8

YES – The wetland class is **Depressional**

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a Depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within the wetland unit being scored.

NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the HGM class listed in column 2 is less than 10% of the unit; classify the wetland using the class that represents more than 90% of the total area.

HGM classes within the wetland unit being rated	HGM class to use in rating
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake Fringe	Lake Fringe
Depressional + Riverine along stream within boundary of depression	Depressional
Depressional + Lake Fringe	Depressional
Riverine + Lake Fringe	Riverine
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE

If you are still unable to determine which of the above criteria apply to your wetland, or if you have **more than 2 HGM classes** within a wetland boundary, classify the wetland as Depressional for the rating.

Wetland name or number A

DEPRESSIONAL AND FLATS WETLANDS

Water Quality Functions - Indicators that the site functions to improve water quality

D 1.0. Does the site have the potential to improve water quality?

D 1.1. <u>Characteristics of surface water outflows from the wetland:</u> Wetland is a depression or flat depression (QUESTION 7 on key) with no surface water leaving it (no outlet). points = 3 Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet. points = 2 Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 1 Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch. points = 1	2
D 1.2. <u>The soil 2 in. below the surface (or duff layer) is true clay or true organic (use NRCS definitions).</u> Yes = 4 No = 0	4
D 1.3. <u>Characteristics and distribution of persistent plants</u> (Emergent, Scrub-shrub, and/or Forested Cowardin classes): Wetland has persistent, ungrazed plants > 95% of area points = 5 Wetland has persistent, ungrazed plants > ½ of area points = 3 Wetland has persistent, ungrazed plants ≥ 1/10 of area points = 1 Wetland has persistent, ungrazed plants < 1/10 of area points = 0	3
D 1.4. <u>Characteristics of seasonal ponding or inundation:</u> <i>This is the area that is ponded for at least 2 months. See description in manual.</i> Area seasonally ponded is > ½ total area of wetland points = 4 Area seasonally ponded is ≥ ¼ total area of wetland points = 2 Area seasonally ponded is < ¼ total area of wetland points = 0	0
Total for D 1	9

Rating of Site Potential If score is: 12-16 = H ☒ 6-11 = M 0-5 = L Record the rating on the first page

D 2.0. Does the landscape have the potential to support the water quality function of the site?

D 2.1. Does the wetland unit receive stormwater discharges? Yes = 1 No = 0	0
D 2.2. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants? Yes = 1 No = 0	1
D 2.3. Are there septic systems within 250 ft of the wetland? Yes = 1 No = 0	1
D 2.4. Are there other sources of pollutants coming into the wetland that are not listed in questions D 2.1-D 2.3? Source _____ Yes = 1 No = 0	0
Total for D 2	2

Rating of Landscape Potential If score is: 3 or 4 = H ☒ 1 or 2 = M 0 = L Record the rating on the first page

D 3.0. Is the water quality improvement provided by the site valuable to society?

D 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, lake, or marine water that is on the 303(d) list? Yes = 1 No = 0	1
D 3.2. Is the wetland in a basin or sub-basin where an aquatic resource is on the 303(d) list? Yes = 1 No = 0	1
D 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality? (Answer YES if there is a TMDL in development or in effect for the basin in which the unit is found.) Yes = 2 No = 0	2
Total for D 3	

Rating of Value If score is: ☒ 2-4 = H 1 = M 0 = L Record the rating on the first page

Wetland name or number A

DEPRESSIONAL AND FLATS WETLANDS

Hydrologic Functions - Indicators that the site functions to reduce flooding and stream degradation

D 4.0. Does the site have the potential to reduce flooding and erosion?		
D 4.1. Characteristics of surface water outflows from the wetland: Wetland is a depression or flat depression with no surface water leaving it (no outlet) points = 4 Wetland has an intermittently flowing stream/ditch, OR highly constricted permanently flowing outlet points = 2 Wetland is a flat depression (question 7 on key), whose outlet is a permanently flowing ditch points = 1 Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 0		2
D 4.2. Depth of storage during wet periods: Estimate the height of ponding above the bottom of the outlet. For wetlands with no outlet, measure from the surface of permanent water or if dry, the deepest part. Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 7 Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet points = 5 Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet points = 3 The wetland is a "headwater" wetland points = 3 Wetland is flat but has small depressions on the surface that trap water points = 1 Marks of ponding less than 0.5 ft (6 in) points = 0		5
D 4.3. Contribution of the wetland to storage in the watershed: Estimate the ratio of the area of upstream basin contributing surface water to the area of the wetland unit itself. The area of the basin is less than 10 times the area of the unit points = 5 The area of the basin is 10 to 100 times the area of the unit points = 3 The area of the basin is more than 100 times the area of the unit points = 0 Entire wetland is in the Flats class points = 5		3
Total for D 4		10

Rating of Site Potential If score is: 12-16 = H ☒ 6-11 = M 0-5 = L Record the rating on the first page

D 5.0. Does the landscape have the potential to support hydrologic functions of the site?		
D 5.1. Does the wetland receive stormwater discharges? Yes = 1 No = 0		0
D 5.2. Is >10% of the area within 150 ft of the wetland in land uses that generate excess runoff? Yes = 1 No = 0		1
D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses (residential at >1 residence/ac, urban, commercial, agriculture, etc.)? Yes = 1 No = 0		1
Total for D 5		2

Rating of Landscape Potential If score is: 3 = H ☒ 1 or 2 = M 0 = L Record the rating on the first page

D 6.0. Are the hydrologic functions provided by the site valuable to society?		
D 6.1. Is the unit in a landscape that has flooding problems? Choose the description that best matches conditions around the wetland unit being rated. Do not add points. <u>Choose the highest score if more than one condition is met.</u> The wetland captures surface water that would otherwise flow downgradient into areas where flooding has damaged human or natural resources (e.g., houses or salmon redds): <ul style="list-style-type: none"> Flooding occurs in a sub-basin that is immediately downgradient of unit. points = 2 Surface flooding problems are in a sub-basin farther downgradient. points = 1 Flooding from groundwater is an issue in the sub-basin. points = 1 The existing or potential outflow from the wetland is so constrained by human or natural conditions that the water stored by the wetland cannot reach areas that flood. <i>Explain why</i> _____ points = 0 There are no problems with flooding downstream of the wetland. points = 0 		1
D 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan? Yes = 2 No = 0		0
Total for D 6		1

Rating of Value If score is: 2-4 = H ☒ 1 = M 0 = L Record the rating on the first page

Wetland name or number A

These questions apply to wetlands of all HGM classes.

HABITAT FUNCTIONS - Indicators that site functions to provide important habitat

H 1.0. Does the site have the potential to provide habitat?

H 1.1. Structure of plant community: Indicators are Cowardin classes and strata within the Forested class. Check the Cowardin plant classes in the wetland. Up to 10 patches may be combined for each class to meet the threshold of ¼ ac if the unit is at least 2.5 ac, or more than 10% of the unit if it is smaller than 2.5 ac.

- | | |
|---|----------------------------------|
| <input checked="" type="checkbox"/> Aquatic bed | 4 structures or more: points = 4 |
| <input checked="" type="checkbox"/> Emergent | 3 structures: points = 2 |
| <input checked="" type="checkbox"/> Scrub-shrub (areas where shrubs have > 30% cover) | 2 structures: points = 1 |
| <input checked="" type="checkbox"/> Forested (areas where trees have > 30% cover) | 1 structure: points = 0 |
- If the unit has a Forested class, check if:*
- ☒ The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/groundcover) that each cover 20% within the Forested polygon

4

H 1.2. Hydroperiods

Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland if the unit is < 2.5 ac, or ¼ ac if the unit is at least 2.5 ac to count (see text for descriptions of hydroperiods).

- | | |
|--|-------------------------------------|
| <input checked="" type="checkbox"/> Permanently flooded or inundated | 4 or more types present: points = 3 |
| <input checked="" type="checkbox"/> Seasonally flooded or inundated | 3 types present: points = 2 |
| <input type="checkbox"/> Occasionally flooded or inundated | 2 types present: points = 1 |
| <input type="checkbox"/> Saturated only | 1 type present: points = 0 |
| <input type="checkbox"/> Permanently flowing stream or river in, or adjacent to, the wetland | |
| <input type="checkbox"/> Intermittently or seasonally flowing stream in, or adjacent to, the wetland | |
| <input type="checkbox"/> Lake Fringe wetland | 2 points |
| <input type="checkbox"/> Freshwater tidal wetland | 2 points |

1

H 1.3. Richness of plant species

Count the number of plant species in the wetland that cover at least 10 ft².

Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. **Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canada thistle**

- | | |
|------------------------------|------------|
| If you counted: > 19 species | points = 2 |
| 5 - 19 species | points = 1 |
| < 5 species | points = 0 |

1

H 1.4. Interspersion of habitats

Decide from the diagrams below whether interspersions among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. If you have four or more plant classes or three classes and open water, the rating is always high.



None = 0 points



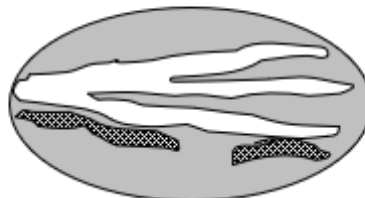
Low = 1 point



Moderate = 2 points



All three diagrams
in this row
are **High = 3 points**



3

Wetland name or number A

<p>H 1.5. Special habitat features:</p> <p>Check the habitat features that are present in the wetland. The number of checks is the number of points.</p> <p><input checked="" type="checkbox"/> Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft long).</p> <p><input checked="" type="checkbox"/> Standing snags (dbh > 4 in.) within the wetland</p> <p><input type="checkbox"/> Undercut banks are present for at least 6.6 ft (2 m) and/or overhanging plants extend at least 3.3 ft (1 m) over open water or a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m)</p> <p><input checked="" type="checkbox"/> Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present (cut shrubs or trees that have not yet weathered where wood is exposed)</p> <p><input checked="" type="checkbox"/> At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated (structures for egg-laying by amphibians)</p> <p><input type="checkbox"/> Invasive plants cover less than 25% of the wetland area in every stratum of plants (see H 1.1 above for the list of strata and H 1.5 in the manual for the list of aggressive plant species)</p>	4
<p>Total for H 1</p>	<p>Add the points in the boxes above</p> <p>13</p>

Rating of Site Potential If score is: 15-18 = H ☒ 1-14 = M 0-6 = L Record the rating on the first page

H 2.0. Does the landscape have the potential to support the habitat functions of the site?	
<p>H 2.1. Accessible habitat (include only habitat polygons accessible from the wetland.</p> <p>Calculate: % relatively undisturbed habitat <u>12</u> + [(% moderate and low intensity land uses)/2] <u>5</u> = <u>14.5</u> %</p> <p>Total accessible habitat is:</p> <p>> 1/3 (33.3%) of 1 km Polygon points = 3</p> <p>20-33% of 1 km Polygon points = 2</p> <p>10-19% of 1 km Polygon points = 1</p> <p>< 10% of 1 km Polygon points = 0</p>	1
<p>H 2.2. Total habitat in 1 km Polygon around the wetland.</p> <p>Calculate: % relatively undisturbed habitat <u>10</u> + [(% moderate and low intensity land uses)/2] <u>44</u> = <u>32</u> %</p> <p>Total habitat > 50% of Polygon points = 3</p> <p>Total habitat 10-50% and in 1-3 patches points = 2</p> <p>Total habitat 10-50% and > 3 patches points = 1</p> <p>Total habitat < 10% of 1 km Polygon points = 0</p>	1
<p>H 2.3. Land use intensity in 1 km Polygon:</p> <p>> 50% of 1 km Polygon is high intensity land use points = (- 2)</p> <p>≤ 50% of 1 km Polygon is high intensity points = 0</p>	0
<p>Total for H 2</p>	<p>Add the points in the boxes above</p> <p>2</p>

Rating of Landscape Potential If score is: 4-6 = H ☒ 1-3 = M < 1 = L Record the rating on the first page

H 3.0. Is the habitat provided by the site valuable to society?	
<p>H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? Choose only the highest score that applies to the wetland being rated.</p> <p>Site meets ANY of the following criteria: points = 2</p> <p><input checked="" type="checkbox"/> It has 3 or more Priority Habitats within 100 m (see next page)</p> <p><input type="checkbox"/> It provides habitat for Threatened or Endangered species (any plant or animal on the state or federal lists)</p> <p><input type="checkbox"/> It is mapped as a location for an individual WDFW Priority Species</p> <p><input type="checkbox"/> It is a Wetland of High Conservation Value as determined by the Department of Natural Resources data</p> <p><input type="checkbox"/> It has been categorized as an important habitat site in a local or regional comprehensive plan, in a Shoreline Master Plan, or in a watershed plan</p> <p>Site has 1 or 2 Priority Habitats (listed on next page) within 100 m points = 1</p> <p>Site does not meet any of the criteria above points = 0</p>	2

Rating of Value If score is ☒ 2 = H 1 = M 0 = L Record the rating on the first page

WDFW Priority Habitats

See complete descriptions of Priority Habitats listed by WDFW, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008 (current year, as revised). [Priority Habitat and Species List](#).¹³³ This list was updated for consistency with guidance from WDFW.

This question is independent of the land use between the wetland unit and the Priority Habitat. All vegetated wetlands are by definition a Priority Habitat but are not included in this list because they are addressed by this rating system.

Count how many of the following Priority Habitats are within 330 ft (100 m) of the wetland unit:

- **Aspen Stands:** Pure or mixed stands of aspen greater than 1 ac (0.4 ha).
- **Biodiversity Areas and Corridors:** Areas of habitat that are relatively important to various species of native fish and wildlife. This habitat automatically counts if mapped on the PHS online map within 100m of the wetland. If not mapped, a determination can be made in the field.
- **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.
- **Cliffs:** Greater than 25 ft (7.6 m) high and occurring below 5000 ft elevation.
- **Fresh Deepwater:** Lands permanently flooded with freshwater, including environments where surface water is permanent and often deep, so that water, rather than air, is the principal medium within which the dominant organisms live. Substrate does not support emergent vegetation. Do not select if Instream habitat is also present, or if the entire Deepwater feature is included in the wetland unit being rated (such as a pond with a vegetated fringe).
- **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.
- ✓ **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources. Do not select if Fresh Deepwater habitat is also present.
- **Nearshore:** Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore.
- **Old-growth/Mature forests:** Old-growth west of Cascade crest – Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) > 32 in. (81 cm) diameter at breast height (dbh) or > 200 years of age. Mature forests – Stands with average diameters exceeding 21 in. (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west of the Cascade crest.

¹³³ <http://wdfw.wa.gov/publications/00165/wdfw00165.pdf>
Wetland Rating System for Western WA: 2014 Update
Rating Form – Version 2, July 2023

Wetland name or number A

- **Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important. For single oaks or oak stands <0.4 ha in urban areas, [WDFW's Management Recommendations for Oregon White Oak](#)¹³⁴ provides more detail for determining if they are Priority Habitats
- ✓ **Riparian:** The area adjacent to freshwater aquatic systems with flowing or standing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.
- ✓ **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 20 in. (51 cm) in western Washington and are > 6.5 ft (2 m) in height. Priority logs are > 12 in. (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.
- **Talus:** Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft (0.15 - 2.0 m), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.
- **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie.

¹³⁴ <https://wdfw.wa.gov/publications/00030/wdfw00030.pdf>
Wetland Rating System for Western WA: 2014 Update
Rating Form – Version 2, July 2023

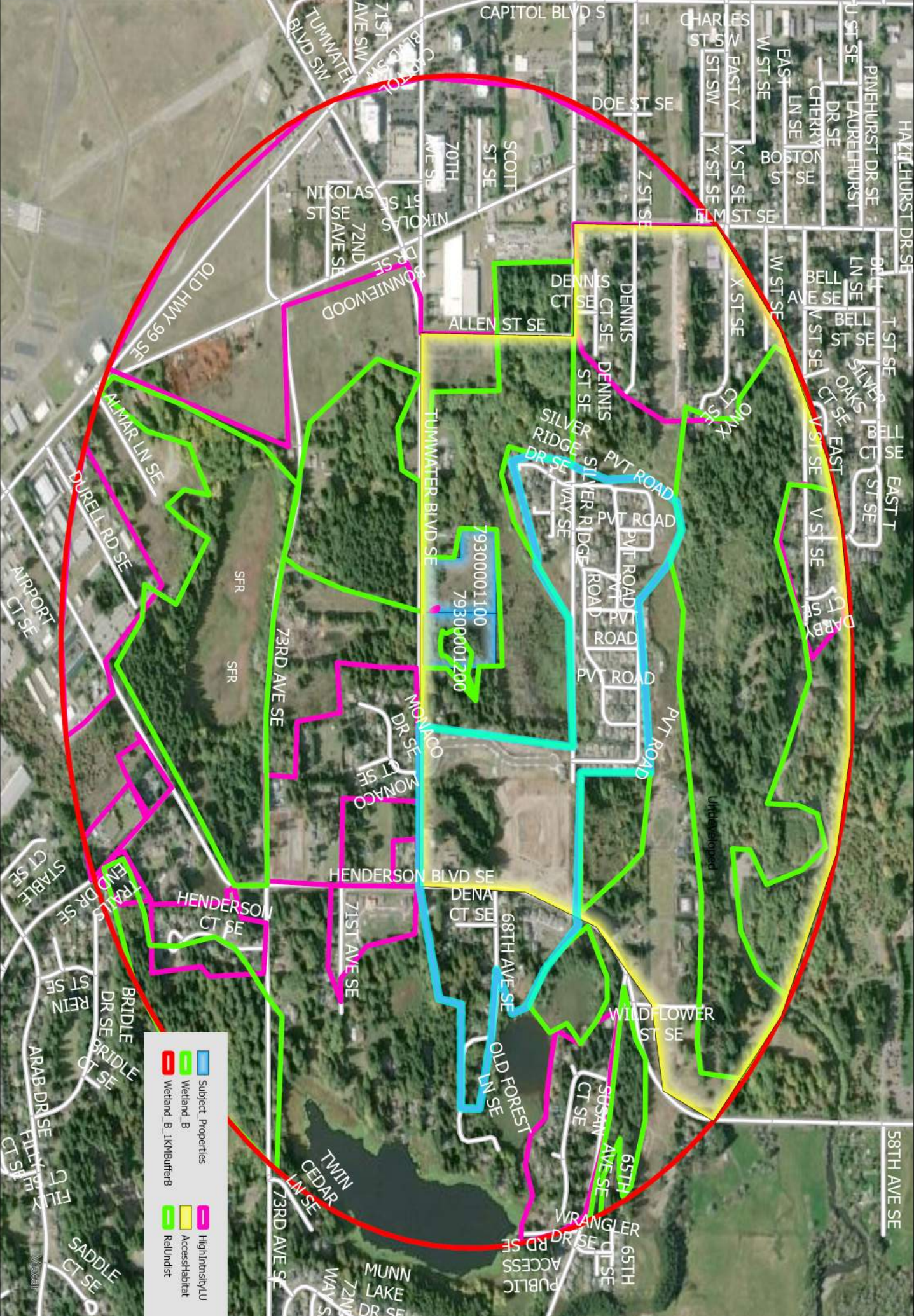
CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type	Category
<i>Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.</i>	
SC 1.0. Estuarine wetlands Does the wetland meet the following criteria for Estuarine wetlands? — The dominant water regime is tidal, — Vegetated, and — With a salinity greater than 0.5 ppt <div style="text-align: right;">Yes – Go to SC 1.1 <input checked="" type="checkbox"/> No – Not an estuarine wetland</div>	
SC 1.1. Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? <div style="text-align: right;">Yes = Category I <input checked="" type="checkbox"/> No – Go to SC 1.2</div>	Cat. I
SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 10% cover of non-native plant species. If non-native species are <i>Spartina</i> , see chapter 4.8 in the manual. — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or unmowed grassland. — The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. <div style="text-align: right;">Yes = Category I <input checked="" type="checkbox"/> No – Category II</div>	Cat. I Cat. II
SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Does the wetland overlap with any known or historical rare plant or rare & high-quality ecosystem polygons on the WNHP Data Explorer ? ¹³⁵ <div style="text-align: right;">Yes = Category I <input checked="" type="checkbox"/> No – Go to SC 2.2</div> SC 2.2. Does the wetland have a rare plant species, rare ecosystem (e.g., plant community), or high-quality common ecosystem that may qualify the site as a WHCV? Contact WNHP for resources to help determine the presence of these elements. <div style="text-align: right;">Yes – Submit data to WA Natural Heritage Program for determination,¹³⁶ Go to SC 2.3 <input checked="" type="checkbox"/> No – Not a WHCV</div> SC 2.3. Did WNHP review the site within 30 days and determine that it has a rare plant or ecosystem that meets their criteria? <div style="text-align: right;">Yes = Category I <input checked="" type="checkbox"/> No – Not a WHCV</div>	Cat. I
SC 3.0. Bogs Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? <i>Use the key below. If you answer YES, you will still need to rate the wetland based on its functions.</i> SC 3.1. Does an area within the wetland unit have organic soil horizons, either peats or mucks, that compose 16 in. or more of the first 32 in. of the soil profile? <div style="text-align: right;">Yes – Go to SC 3.3 <input checked="" type="checkbox"/> No – Go to SC 3.2</div> SC 3.2. Does an area within the wetland unit have organic soils, either peats or mucks, that are less than 16 in. deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? <div style="text-align: right;">Yes – Go to SC 3.3 <input checked="" type="checkbox"/> No – Not a bog</div> SC 3.3. Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least a 30% cover of plant species listed in Table 4? <div style="text-align: right;">Yes = Category I bog <input checked="" type="checkbox"/> No – Go to SC 3.4</div> NOTE: If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in. deep. If the pH is less than 5.0 and the plant species in Table 4 are present, the wetland is a bog. SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy? <div style="text-align: right;">Yes = Category I bog <input checked="" type="checkbox"/> No – Not a bog</div>	Cat. I

¹³⁵ <https://www.dnr.wa.gov/NHPdata>¹³⁶ https://www.dnr.wa.gov/Publications/amp_nh_sighting_form.pdf

Wetland name or number A

<p>SC 4.0. Forested Wetlands</p> <p>Does the wetland have at least <u>1 contiguous acre</u> of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as Priority Habitats? <i>If you answer YES, you will still need to rate the wetland based on its functions.</i></p> <ul style="list-style-type: none"> — Old-growth forests (west of Cascade crest): Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 in. (81 cm) or more. — Mature forests (west of the Cascade Crest): Stands where the largest trees are 80- 200 years old OR the species that make up the canopy have an average diameter (dbh) exceeding 21 in. (53 cm). <p>Yes = Category I No = Not a forested wetland for this section</p>	<p>Cat. I</p>
<p>SC 5.0. Wetlands in Coastal Lagoons</p> <p>Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?</p> <ul style="list-style-type: none"> — The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks — The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon (<i>needs to be measured near the bottom</i>) — The lagoon retains some of its surface water at low tide during spring tides <p>Yes – Go to SC 5.1 No = Not a wetland in a coastal lagoon</p> <p>SC 5.1. Does the wetland meet all of the following three conditions?</p> <ul style="list-style-type: none"> — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species in H 1.5 in the manual). — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or unmowed grassland. — The wetland is larger than 1/10 ac (4350 ft²) <p>Yes = Category I No = Category II</p>	<p>Cat. I</p> <p>Cat. II</p>
<p>SC 6.0. Interdunal Wetlands</p> <p>Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? <i>If you answer YES, you will still need to rate the wetland based on its habitat functions.</i></p> <p>In practical terms that means the following geographic areas:</p> <ul style="list-style-type: none"> — Long Beach Peninsula: Lands west of SR 103 — Grayland-Westport: Lands west of SR 105 — Ocean Shores-Copalis: Lands west of SR 115 and SR 109 and Ocean Shores Blvd SW, including lands west of E. Oceans Shores Blvd SW. <p>Yes – Go to SC 6.1 No = Not an interdunal wetland for rating</p> <p>SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)?</p> <p>Yes = Category I No – Go to SC 6.2</p> <p>SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger?</p> <p>Yes = Category II No – Go to SC 6.3</p> <p>SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac?</p> <p>Yes = Category III No = Category IV</p>	<p>Cat I</p> <p>Cat. II</p> <p>Cat. III</p> <p>Cat. IV</p>
<p>Category of wetland based on Special Characteristics</p> <p>If you answered No for all types, enter "Not Applicable" on Summary Form</p>	



Land Services Northwest
120 State Avenue NE PMB 190
Olympia, WA 98501

1KM Land Use Intensity Map



Land Use Calculations

	ACRES			%
1KM	857			
Wetland B	1.06			
1KM-Wetland B	855.94			100
High Intensity	309	0.361007	36.10066	
Relatively Undisturbed	260	0.30376	30.37596	
Low Medium Use	286.94	0.335234	33.52338	

Accessible Habitat	401	0.467911		
Wetland B	1.06			
Accessible Habitat-Wet B	399.94	0.467252		
RU	138	0.161226	16.12263	
Low/Medium LU	160.94	0.188173	18.81731	
High Intensity	101	0.117853	11.7853	



Wetland B
Forested with Shrub
and Emergent Layer

79300001200

SFR

SFR

Subject_Properties

Wetland_B

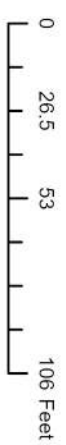
AccessHabitat

Maxar, Microsoft



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Olympia, WA 98501

Cowardin Classification Map





Wetland B

79300001200

Seasonally Flooded

Undeveloped

SFR

SFR

- Subject_Properties
- Wetland_B
- AccessHabitat

Maxar, Microsoft

0 26.5 53 106 Feet

Hydroperiod Classification Map

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Olympia, WA 98501





	Subject_Properties
	Wetland_B
	Wetland_B_150ftBuffer
	PollutionGenLU

TUMWATER BLVD SE

Mapbox, Microsoft

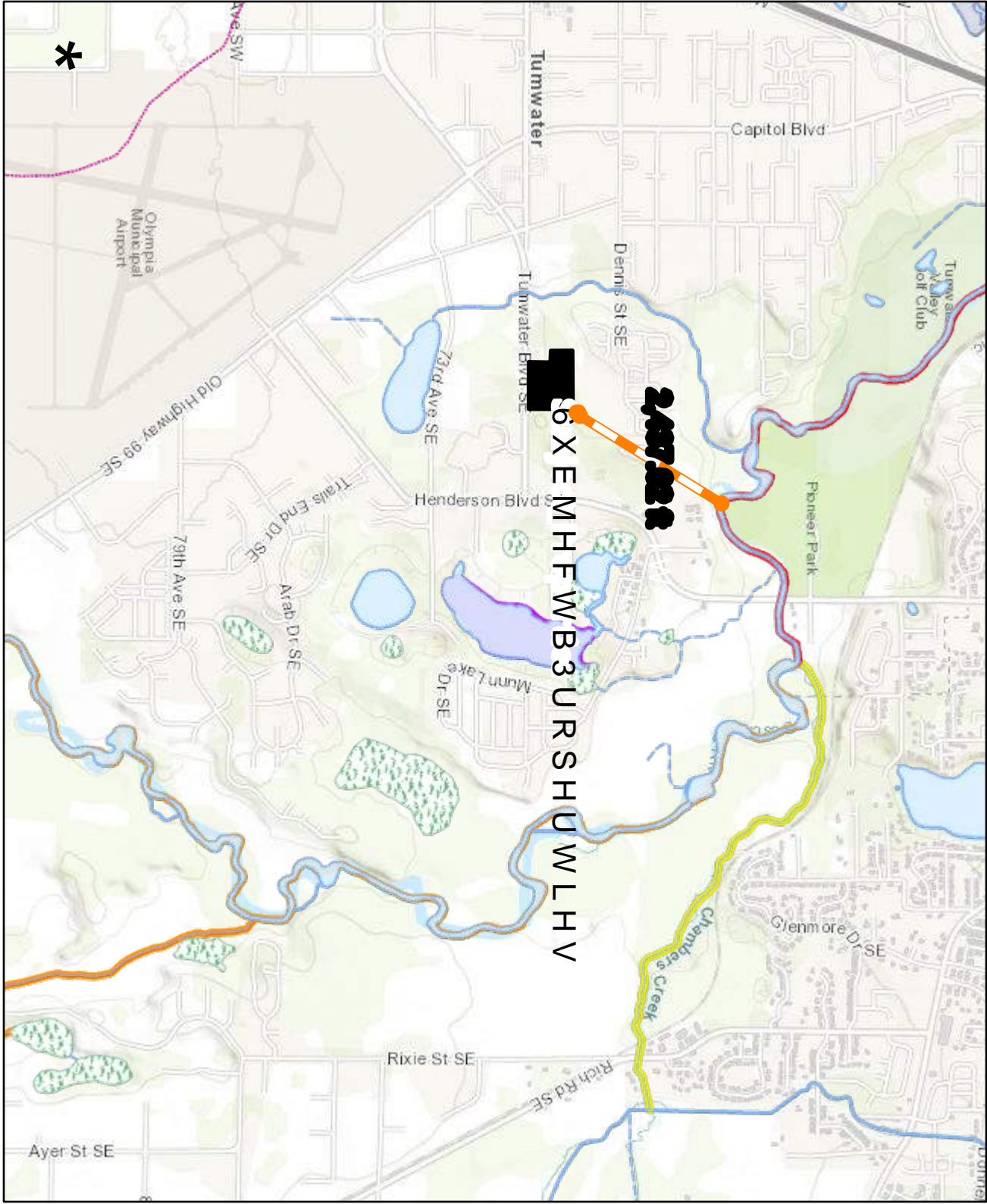


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150ft Pollution Generating Land Use



G : DWHU 4XDOLW\ \$WODV ODS



\$VVHVHG : DWHU 6

: DWHU
& DWHJRU
& DWHJRU
& DWHJRU
& DWHJRU
& DWHJRU
& DWHJRU

6HGLPHQW
& DWHJRU
& DWHJRU
& DWHJRU
& DWHJRU
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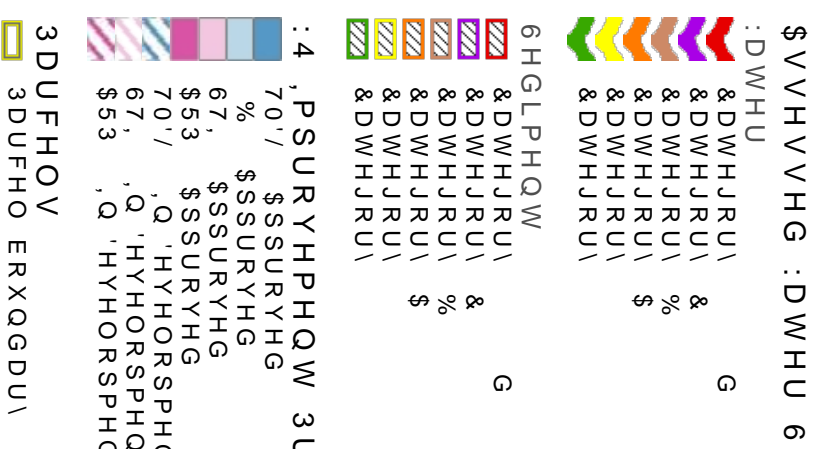
3DUFHOV
& DWHJRU
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&LW\ RI 20\PSLD :\$ 6WDWH 3DUNV *.6 (VUL 7RPTRP *DUPLO 6DIL*UDSK
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(3\$ 136 86 &HQVXV %XUNDX 86\$ 86):6

0LQW

70', Q % DV L Q



Wetland name or number B

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland B Date of site visit: 8/16/2024
Rated by Alexander Callender Trained by Ecology? X Yes ___ No ___ Date of training 12/13
HGM Class used for rating Depression Wetland has multiple HGM classes? ___ Y X N

NOTE: Form is not complete without the required figures (figures can be combined).

Source of base aerial photo/map 2024 ESRI Aerial

OVERALL WETLAND CATEGORY _____ (based on functions _____ or special characteristics _____)

1. Category of wetland based on FUNCTIONS

_____ **Category I** – Total score = 23 - 27
_____ **Category II** – Total score = 20 - 22
X _____ **Category III** – Total score = 16 - 19
_____ **Category IV** – Total score = 9 - 15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
Circle the appropriate ratings				
Site Potential	H <u>M</u> L	H <u>M</u> L	H M <u>L</u>	
Landscape Potential	H <u>M</u> L	H <u>M</u> L	H <u>M</u> L	
Value	<u>H</u> M L	H <u>M</u> L	H <u>M</u> L	TOTAL
Score Based on Ratings	7	6	5	18

**Score for each
function based
on three
ratings**
(order of ratings
is not important)

9 = H, H, H
8 = H, H, M
7 = H, H, L
7 = H, M, M
6 = H, M, L
6 = M, M, M
5 = H, L, L
5 = M, M, L
4 = M, L, L
3 = L, L, L

2. Category based on SPECIAL CHARACTERISTICS of wetland

CHARACTERISTIC	CATEGORY
Estuarine	I II
Wetland of High Conservation Value	I
Bog	I
Mature Forest	I
Old Growth Forest	I
Coastal Lagoon	I II
Interdunal	I II III IV
None of the above	X

Wetland name or number B

Maps and figures required to answer questions correctly for Western Washington

Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	D 1.3, H 1.1, H 1.4	Cowardin
Hydroperiods	D 1.4, H 1.2	Hydro
Location of outlet (<i>can be added to map of hydroperiods</i>)	D 1.1, D 4.1	Outlet
Boundary of area within 150 ft of the wetland (<i>can be added to another figure</i>)	D 2.2, D 5.2	150 Ft
Map of the contributing basin	D 4.3, D 5.3	303d
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and total habitat	H 2.1, H 2.2, H 2.3	1 Km
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	303d
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	TMDL

Riverine Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Ponded depressions	R 1.1	
Boundary of area within 150 ft of the wetland (<i>can be added to another figure</i>)	R 2.4	
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	
Width of unit vs. width of stream (<i>can be added to another figure</i>)	R 4.1	
Map of the contributing basin	R 2.2, R 2.3, R 5.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and total habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	R 3.2, R 3.3	

Lake Fringe Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	L 1.1, L 4.1, H 1.1, H 1.4	
Plant cover of trees, shrubs, and herbaceous plants	L 1.2	
Boundary of area within 150 ft of the wetland (<i>can be added to another figure</i>)	L 2.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and total habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	L 3.1, L 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	L 3.3	

Slope Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Plant cover of dense trees, shrubs, and herbaceous plants	S 1.3	
Plant cover of dense, rigid trees, shrubs, and herbaceous plants (<i>can be added to figure above</i>)	S 4.1	
Boundary of 150 ft buffer (<i>can be added to another figure</i>)	S 2.1, S 5.1	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and total habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	S 3.3	

HGM Classification of Wetlands in Western Washington

For questions 1-7, the criteria described must apply to the entire unit being rated.

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides except during floods?

☒ **NO** – go to 2

YES – the wetland class is **Tidal Fringe** – go to 1.1

- 1.1 Is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?

NO – Saltwater Tidal Fringe (Estuarine)

YES – Freshwater Tidal Fringe

If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is Saltwater Tidal Fringe, it is an **Estuarine** wetland and is not scored. This method **cannot** be used to score functions for estuarine wetlands.

2. The entire wetland unit is flat, and precipitation is the only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.

☒ **NO** – go to 3

YES – The wetland class is **Flats**

If your wetland can be classified as a Flats wetland, use the form for **Depressional** wetlands.

3. Does the entire wetland unit **meet all** of the following criteria?

___ The vegetated part of the wetland is on the shores of a body of permanent open water (without any plants on the surface at any time of the year) at least 20 ac (8 ha) in size,

___ At least 30% of the open water area is deeper than 6.6 ft (2 m).

☒ **NO** – go to 4

YES – The wetland class is **Lake Fringe** (Lacustrine Fringe)

4. Does the entire wetland unit **meet all** of the following criteria?

___ The wetland is on a slope (slope can be very gradual),

___ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheet flow, or in a swale without distinct banks,

___ The water leaves the wetland **without being impounded**.

☒ **NO** – go to 5

YES – The wetland class is **Slope**

NOTE: Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 ft deep).

Wetland name or number B

5. Does the entire wetland unit **meet all** of the following criteria?

____ The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river,
____ The overbank flooding occurs at least once every 2 years.

NO – go to 6

YES – The wetland class is **Riverine**

NOTE: The Riverine unit can contain depressions that are filled with water when the river is not flooding

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time during the year? This means that any outlet, if present, is higher than the interior of the wetland.

NO – go to 7

YES – The wetland class is **Depressional**

7. Is the entire wetland unit located in a very flat area with no obvious depression and no overbank flooding? The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched but has no obvious natural outlet.

NO – go to 8

YES – The wetland class is **Depressional**

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a Depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within the wetland unit being scored.

NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the HGM class listed in column 2 is less than 10% of the unit; classify the wetland using the class that represents more than 90% of the total area.

HGM classes within the wetland unit being rated	HGM class to use in rating
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake Fringe	Lake Fringe
Depressional + Riverine along stream within boundary of depression	Depressional
Depressional + Lake Fringe	Depressional
Riverine + Lake Fringe	Riverine
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE

If you are still unable to determine which of the above criteria apply to your wetland, or if you have **more than 2 HGM classes** within a wetland boundary, classify the wetland as Depressional for the rating.

Wetland name or number B

DEPRESSIONAL AND FLATS WETLANDS

Water Quality Functions - Indicators that the site functions to improve water quality

D 1.0. Does the site have the potential to improve water quality?

D 1.1. <u>Characteristics of surface water outflows from the wetland:</u> Wetland is a depression or flat depression (QUESTION 7 on key) with no surface water leaving it (no outlet). points = 3 Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet. points = 2 Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 1 Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch. points = 1	2
D 1.2. <u>The soil 2 in. below the surface (or duff layer) is true clay or true organic (use NRCS definitions).</u> Yes = 4 No = 0	0
D 1.3. <u>Characteristics and distribution of persistent plants</u> (Emergent, Scrub-shrub, and/or Forested Cowardin classes): Wetland has persistent, ungrazed plants > 95% of area points = 5 Wetland has persistent, ungrazed plants > 1/2 of area points = 3 Wetland has persistent, ungrazed plants ≥ 1/10 of area points = 1 Wetland has persistent, ungrazed plants < 1/10 of area points = 0	0
D 1.4. <u>Characteristics of seasonal ponding or inundation:</u> <i>This is the area that is ponded for at least 2 months. See description in manual.</i> Area seasonally ponded is > 1/2 total area of wetland points = 4 Area seasonally ponded is ≥ 1/4 total area of wetland points = 2 Area seasonally ponded is < 1/4 total area of wetland points = 0	4
Total for D 1	6

Rating of Site Potential If score is: 12-16 = H ✓6-11 = M 0-5 = L *Record the rating on the first page*

D 2.0. Does the landscape have the potential to support the water quality function of the site?

D 2.1. Does the wetland unit receive stormwater discharges? Yes = 1 No = 0	1
D 2.2. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants? Yes = 1 No = 0	1
D 2.3. Are there septic systems within 250 ft of the wetland? Yes = 1 No = 0	0
D 2.4. Are there other sources of pollutants coming into the wetland that are not listed in questions D 2.1-D 2.3? Source _____ Yes = 1 No = 0	0
Total for D 2	2

Rating of Landscape Potential If score is: 3 or 4 = H ✓1 or 2 = M 0 = L *Record the rating on the first page*

D 3.0. Is the water quality improvement provided by the site valuable to society?

D 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, lake, or marine water that is on the 303(d) list? Yes = 1 No = 0	1
D 3.2. Is the wetland in a basin or sub-basin where an aquatic resource is on the 303(d) list? Yes = 1 No = 0	1
D 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality? (Answer YES if there is a TMDL in development or in effect for the basin in which the unit is found.) Yes = 2 No = 0	0
Total for D 3	2

Rating of Value If score is: ✓2-4 = H 1 = M 0 = L *Record the rating on the first page*

Wetland name or number B

DEPRESSIONAL AND FLATS WETLANDS

Hydrologic Functions - Indicators that the site functions to reduce flooding and stream degradation

D 4.0. Does the site have the potential to reduce flooding and erosion?	
D 4.1. Characteristics of surface water outflows from the wetland: Wetland is a depression or flat depression with no surface water leaving it (no outlet) points = 4 Wetland has an intermittently flowing stream/ditch, OR highly constricted permanently flowing outlet points = 2 Wetland is a flat depression (question 7 on key), whose outlet is a permanently flowing ditch points = 1 Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 0	2
D 4.2. Depth of storage during wet periods: Estimate the height of ponding above the bottom of the outlet. For wetlands with no outlet, measure from the surface of permanent water or if dry, the deepest part. Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 7 Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet points = 5 Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet points = 3 The wetland is a "headwater" wetland points = 3 Wetland is flat but has small depressions on the surface that trap water points = 1 Marks of ponding less than 0.5 ft (6 in) points = 0	3
D 4.3. Contribution of the wetland to storage in the watershed: Estimate the ratio of the area of upstream basin contributing surface water to the area of the wetland unit itself. The area of the basin is less than 10 times the area of the unit points = 5 The area of the basin is 10 to 100 times the area of the unit points = 3 The area of the basin is more than 100 times the area of the unit points = 0 Entire wetland is in the Flats class points = 5	3
Total for D 4	Add the points in the boxes above 8

Rating of Site Potential If score is: 12-16 = H ☒ 6-11 = M 0-5 = L Record the rating on the first page

D 5.0. Does the landscape have the potential to support hydrologic functions of the site?	
D 5.1. Does the wetland receive stormwater discharges? Yes = 1 No = 0	1
D 5.2. Is >10% of the area within 150 ft of the wetland in land uses that generate excess runoff? Yes = 1 No = 0	1
D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses (residential at >1 residence/ac, urban, commercial, agriculture, etc.)? Yes = 1 No = 0	0
Total for D 5	Add the points in the boxes above 2

Rating of Landscape Potential If score is: 3 = H ☒ 1 or 2 = M 0 = L Record the rating on the first page

D 6.0. Are the hydrologic functions provided by the site valuable to society?	
D 6.1. Is the unit in a landscape that has flooding problems? Choose the description that best matches conditions around the wetland unit being rated. Do not add points. <u>Choose the highest score if more than one condition is met.</u> The wetland captures surface water that would otherwise flow downgradient into areas where flooding has damaged human or natural resources (e.g., houses or salmon redds): <ul style="list-style-type: none"> Flooding occurs in a sub-basin that is immediately downgradient of unit. points = 2 Surface flooding problems are in a sub-basin farther downgradient. points = 1 Flooding from groundwater is an issue in the sub-basin. points = 1 The existing or potential outflow from the wetland is so constrained by human or natural conditions that the water stored by the wetland cannot reach areas that flood. <i>Explain why</i> _____ points = 0 There are no problems with flooding downstream of the wetland. points = 0 	1
D 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan? Yes = 2 No = 0	0
Total for D 6	Add the points in the boxes above 1

Rating of Value If score is: 2-4 = H ☒ 1 = M 0 = L Record the rating on the first page

Wetland name or number B

These questions apply to wetlands of all HGM classes.

HABITAT FUNCTIONS - Indicators that site functions to provide important habitat

H 1.0. Does the site have the potential to provide habitat?

H 1.1. Structure of plant community: Indicators are Cowardin classes and strata within the Forested class. Check the Cowardin plant classes in the wetland. Up to 10 patches may be combined for each class to meet the threshold of ¼ ac if the unit is at least 2.5 ac, or more than 10% of the unit if it is smaller than 2.5 ac.

- | | |
|---|----------------------------------|
| <input type="checkbox"/> Aquatic bed | 4 structures or more: points = 4 |
| <input type="checkbox"/> Emergent | 3 structures: points = 2 |
| <input type="checkbox"/> Scrub-shrub (areas where shrubs have > 30% cover) | 2 structures: points = 1 |
| <input checked="" type="checkbox"/> Forested (areas where trees have > 30% cover) | 1 structure: points = 0 |
- If the unit has a Forested class, check if:*
- ☒ The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/groundcover) that each cover 20% within the Forested polygon

1

H 1.2. Hydroperiods

Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland if the unit is < 2.5 ac, or ¼ ac if the unit is at least 2.5 ac to count (see text for descriptions of hydroperiods).

- | | |
|--|-------------------------------------|
| <input type="checkbox"/> Permanently flooded or inundated | 4 or more types present: points = 3 |
| <input checked="" type="checkbox"/> Seasonally flooded or inundated | 3 types present: points = 2 |
| <input type="checkbox"/> Occasionally flooded or inundated | 2 types present: points = 1 |
| <input type="checkbox"/> Saturated only | 1 type present: points = 0 |
| <input type="checkbox"/> Permanently flowing stream or river in, or adjacent to, the wetland | |
| <input type="checkbox"/> Intermittently or seasonally flowing stream in, or adjacent to, the wetland | |
| <input type="checkbox"/> Lake Fringe wetland | 2 points |
| <input type="checkbox"/> Freshwater tidal wetland | 2 points |

0

H 1.3. Richness of plant species

Count the number of plant species in the wetland that cover at least 10 ft².

Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. **Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canada thistle**

- | | |
|------------------------------|------------|
| If you counted: > 19 species | points = 2 |
| 5 - 19 species | points = 1 |
| < 5 species | points = 0 |

1

H 1.4. Interspersion of habitats

Decide from the diagrams below whether interspersions among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. If you have four or more plant classes or three classes and open water, the rating is always high.



None = 0 points



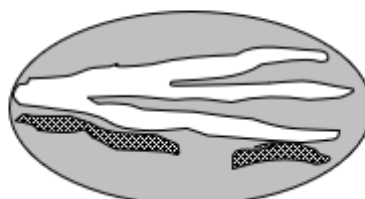
Low = 1 point



Moderate = 2 points



All three diagrams
in this row
are High = 3 points



0

Wetland name or number B

<p>H 1.5. Special habitat features:</p> <p>Check the habitat features that are present in the wetland. The number of checks is the number of points.</p> <p><input checked="" type="checkbox"/> Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft long).</p> <p><input checked="" type="checkbox"/> Standing snags (dbh > 4 in.) within the wetland</p> <p><input type="checkbox"/> Undercut banks are present for at least 6.6 ft (2 m) and/or overhanging plants extend at least 3.3 ft (1 m) over open water or a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m)</p> <p><input type="checkbox"/> Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present (cut shrubs or trees that have not yet weathered where wood is exposed)</p> <p><input checked="" type="checkbox"/> At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated (structures for egg-laying by amphibians)</p> <p><input type="checkbox"/> Invasive plants cover less than 25% of the wetland area in every stratum of plants (see H 1.1 above for the list of strata and H 1.5 in the manual for the list of aggressive plant species)</p>	3
<p>Total for H 1</p>	<p>Add the points in the boxes above</p> <p>5</p>

Rating of Site Potential If score is: 15-18 = H 7-14 = M ☒ 0-6 = L Record the rating on the first page

H 2.0. Does the landscape have the potential to support the habitat functions of the site?	
<p>H 2.1. Accessible habitat (include only habitat polygons accessible from the wetland.</p> <p>Calculate: % relatively undisturbed habitat <u>16</u> + [(% moderate and low intensity land uses)/2] <u>9</u> = <u>25</u> %</p> <p>Total accessible habitat is:</p> <p>> 1/3 (33.3%) of 1 km Polygon points = 3</p> <p>20-33% of 1 km Polygon points = 2</p> <p>10-19% of 1 km Polygon points = 1</p> <p>< 10% of 1 km Polygon points = 0</p>	2
<p>H 2.2. Total habitat in 1 km Polygon around the wetland.</p> <p>Calculate: % relatively undisturbed habitat <u>30</u> + [(% moderate and low intensity land uses)/2] <u>16.5</u> = <u>46.5</u> %</p> <p>Total habitat > 50% of Polygon points = 3</p> <p>Total habitat 10-50% and in 1-3 patches points = 2</p> <p>Total habitat 10-50% and > 3 patches points = 1</p> <p>Total habitat < 10% of 1 km Polygon points = 0</p>	1
<p>H 2.3. Land use intensity in 1 km Polygon:</p> <p>> 50% of 1 km Polygon is high intensity land use points = (- 2)</p> <p>≤ 50% of 1 km Polygon is high intensity points = 0</p>	0
<p>Total for H 2</p>	<p>Add the points in the boxes above</p> <p>3</p>

Rating of Landscape Potential If score is: 4-6 = H ☒ 1-3 = M < 1 = L Record the rating on the first page

H 3.0. Is the habitat provided by the site valuable to society?	
<p>H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? <i>Choose only the highest score that applies to the wetland being rated.</i></p> <p>Site meets ANY of the following criteria: points = 2</p> <p>— It has 3 or more Priority Habitats within 100 m (see next page)</p> <p>— It provides habitat for Threatened or Endangered species (any plant or animal on the state or federal lists)</p> <p>— It is mapped as a location for an individual WDFW Priority Species</p> <p>— It is a Wetland of High Conservation Value as determined by the Department of Natural Resources data</p> <p>— It has been categorized as an important habitat site in a local or regional comprehensive plan, in a Shoreline Master Plan, or in a watershed plan</p> <p>Site has 1 or 2 Priority Habitats (listed on next page) within 100 m points = 1</p> <p>Site does not meet any of the criteria above points = 0</p>	1

Rating of Value If score is: 2 = H ☒ 1 = M 0 = L Record the rating on the first page

WDFW Priority Habitats

See complete descriptions of Priority Habitats listed by WDFW, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008 (current year, as revised). [Priority Habitat and Species List](#).¹³³ This list was updated for consistency with guidance from WDFW.

This question is independent of the land use between the wetland unit and the Priority Habitat. All vegetated wetlands are by definition a Priority Habitat but are not included in this list because they are addressed by this rating system.

Count how many of the following Priority Habitats are within 330 ft (100 m) of the wetland unit:

- **Aspen Stands:** Pure or mixed stands of aspen greater than 1 ac (0.4 ha).
- **Biodiversity Areas and Corridors:** Areas of habitat that are relatively important to various species of native fish and wildlife. This habitat automatically counts if mapped on the PHS online map within 100m of the wetland. If not mapped, a determination can be made in the field.
- **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.
- **Cliffs:** Greater than 25 ft (7.6 m) high and occurring below 5000 ft elevation.
- **Fresh Deepwater:** Lands permanently flooded with freshwater, including environments where surface water is permanent and often deep, so that water, rather than air, is the principal medium within which the dominant organisms live. Substrate does not support emergent vegetation. Do not select if Instream habitat is also present, or if the entire Deepwater feature is included in the wetland unit being rated (such as a pond with a vegetated fringe).
- **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.
- **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources. Do not select if Fresh Deepwater habitat is also present.
- **Nearshore:** Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore.
- **Old-growth/Mature forests:** Old-growth west of Cascade crest – Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) > 32 in. (81 cm) diameter at breast height (dbh) or > 200 years of age. Mature forests – Stands with average diameters exceeding 21 in. (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west of the Cascade crest.

¹³³ <http://wdfw.wa.gov/publications/00165/wdfw00165.pdf>
Wetland Rating System for Western WA: 2014 Update
Rating Form – Version 2, July 2023

Wetland name or number B

- **Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important. For single oaks or oak stands <0.4 ha in urban areas, [WDFW's Management Recommendations for Oregon White Oak](#)¹³⁴ provides more detail for determining if they are Priority Habitats
- **Riparian:** The area adjacent to freshwater aquatic systems with flowing or standing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.
- ✓ **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 20 in. (51 cm) in western Washington and are > 6.5 ft (2 m) in height. Priority logs are > 12 in. (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.
- **Talus:** Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft (0.15 - 2.0 m), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.
- **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie.

¹³⁴ <https://wdfw.wa.gov/publications/00030/wdfw00030.pdf>
Wetland Rating System for Western WA: 2014 Update
Rating Form – Version 2, July 2023

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

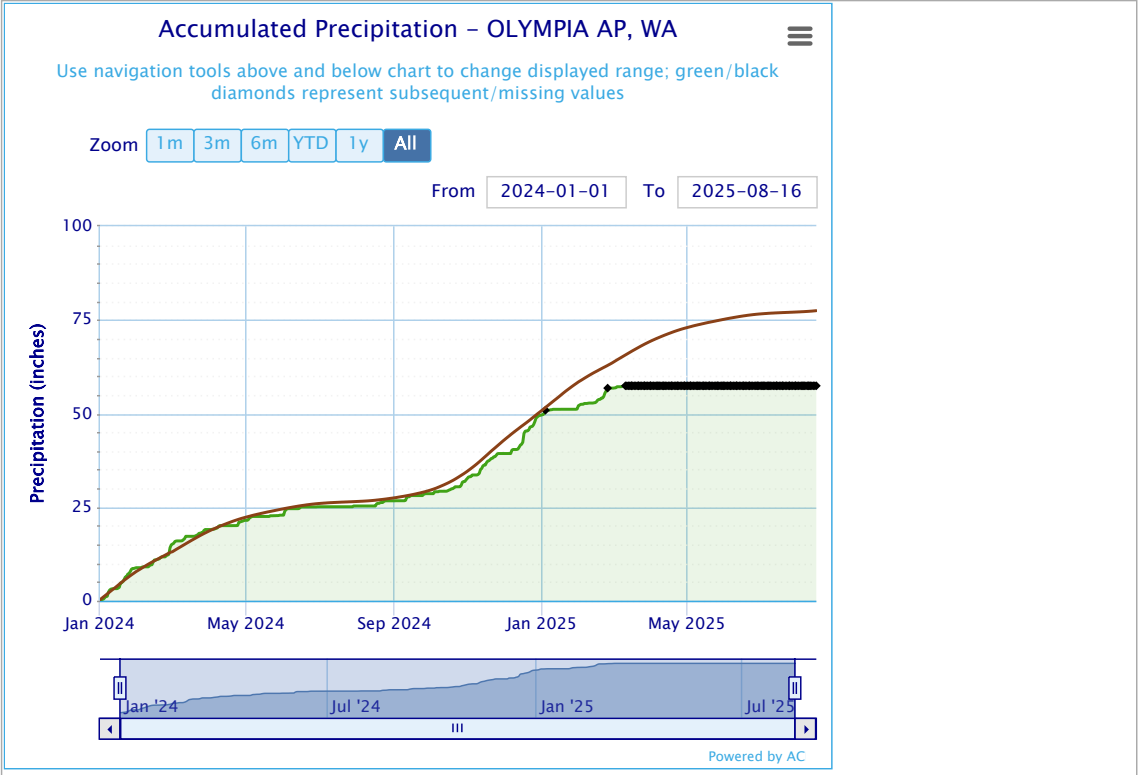
Wetland Type	Category
<i>Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.</i>	
SC 1.0. Estuarine wetlands Does the wetland meet the following criteria for Estuarine wetlands? — The dominant water regime is tidal, — Vegetated, and — With a salinity greater than 0.5 ppt <div style="text-align: right;">Yes – Go to SC 1.1 No = Not an estuarine wetland</div>	
SC 1.1. Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? <div style="text-align: right;">Yes = Category I No – Go to SC 1.2</div>	Cat. I
SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 10% cover of non-native plant species. If non-native species are <i>Spartina</i> , see chapter 4.8 in the manual. — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or unmowed grassland. — The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. <div style="text-align: right;">Yes = Category I No = Category II</div>	Cat. I Cat. II
SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Does the wetland overlap with any known or historical rare plant or rare & high-quality ecosystem polygons on the WNHP Data Explorer ? ¹³⁵ <div style="text-align: right;">Yes = Category I No – Go to SC 2.2</div> SC 2.2. Does the wetland have a rare plant species, rare ecosystem (e.g., plant community), or high-quality common ecosystem that may qualify the site as a WHCV? Contact WNHP for resources to help determine the presence of these elements. <div style="text-align: right;">Yes – Submit data to WA Natural Heritage Program for determination,¹³⁶ Go to SC 2.3 No = Not a WHCV</div> SC 2.3. Did WNHP review the site within 30 days and determine that it has a rare plant or ecosystem that meets their criteria? <div style="text-align: right;">Yes = Category I No = Not a WHCV</div>	Cat. I
SC 3.0. Bogs Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? <i>Use the key below. If you answer YES, you will still need to rate the wetland based on its functions.</i> SC 3.1. Does an area within the wetland unit have organic soil horizons, either peats or mucks, that compose 16 in. or more of the first 32 in. of the soil profile? <div style="text-align: right;">Yes – Go to SC 3.3 No – Go to SC 3.2</div> SC 3.2. Does an area within the wetland unit have organic soils, either peats or mucks, that are less than 16 in. deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? <div style="text-align: right;">Yes – Go to SC 3.3 No = Not a bog</div> SC 3.3. Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least a 30% cover of plant species listed in Table 4? <div style="text-align: right;">Yes = Category I bog No – Go to SC 3.4</div> NOTE: If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in. deep. If the pH is less than 5.0 and the plant species in Table 4 are present, the wetland is a bog. SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy? <div style="text-align: right;">Yes = Category I bog No = Not a bog</div>	Cat. I

¹³⁵ <https://www.dnr.wa.gov/NHPdata>¹³⁶ https://www.dnr.wa.gov/Publications/amp_nh_sighting_form.pdf

Wetland name or number B

<p>SC 4.0. Forested Wetlands</p> <p>Does the wetland have at least <u>1 contiguous acre</u> of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as Priority Habitats? <i>If you answer YES, you will still need to rate the wetland based on its functions.</i></p> <ul style="list-style-type: none"> — Old-growth forests (west of Cascade crest): Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 in. (81 cm) or more. — Mature forests (west of the Cascade Crest): Stands where the largest trees are 80- 200 years old OR the species that make up the canopy have an average diameter (dbh) exceeding 21 in. (53 cm). <p style="text-align: right;">Yes = Category I No = Not a forested wetland for this section</p>	<p style="text-align: center;">Cat. I</p>
<p>SC 5.0. Wetlands in Coastal Lagoons</p> <p>Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?</p> <ul style="list-style-type: none"> — The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks — The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon (<i>needs to be measured near the bottom</i>) — The lagoon retains some of its surface water at low tide during spring tides <p style="text-align: right;">Yes – Go to SC 5.1 No = Not a wetland in a coastal lagoon</p> <p>SC 5.1. Does the wetland meet all of the following three conditions?</p> <ul style="list-style-type: none"> — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species in H 1.5 in the manual). — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or unmowed grassland. — The wetland is larger than 1/10 ac (4350 ft²) <p style="text-align: right;">Yes = Category I No = Category II</p>	<p style="text-align: center;">Cat. I</p> <p style="text-align: center;">Cat. II</p>
<p>SC 6.0. Interdunal Wetlands</p> <p>Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? <i>If you answer YES, you will still need to rate the wetland based on its habitat functions.</i></p> <p>In practical terms that means the following geographic areas:</p> <ul style="list-style-type: none"> — Long Beach Peninsula: Lands west of SR 103 — Grayland-Westport: Lands west of SR 105 — Ocean Shores-Copalis: Lands west of SR 115 and SR 109 and Ocean Shores Blvd SW, including lands west of E. Oceans Shores Blvd SW. <p style="text-align: right;">Yes – Go to SC 6.1 No = Not an interdunal wetland for rating</p> <p>SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)?</p> <p style="text-align: right;">Yes = Category I No – Go to SC 6.2</p> <p>SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger?</p> <p style="text-align: right;">Yes = Category II No – Go to SC 6.3</p> <p>SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac?</p> <p style="text-align: right;">Yes = Category III No = Category IV</p>	<p style="text-align: center;">Cat I</p> <p style="text-align: center;">Cat. II</p> <p style="text-align: center;">Cat. III</p> <p style="text-align: center;">Cat. IV</p>
<p>Category of wetland based on Special Characteristics</p> <p>If you answered No for all types, enter "Not Applicable" on Summary Form</p>	

Appendix J - NOAA NOW DATA



Note regarding subsequent/missing values

APPENDIX 4

WWHM REPORT

JSA CIVIL

Engineering | Planning | Management

WWHM2012
PROJECT REPORT

General Model Information

WWHM2012 Project Name: Tumwater Blvd 2

Site Name: Tumwater Townhomes

Site Address: Tumwater Blvd

City: Tumwater

Report Date: 5/12/2025

Gage: Olympia Airport

Data Start: 1955/10/01

Data End: 2008/09/30

Timestep: 15 Minute

Precip Scale: 0.000 (adjusted)

Version Date: 2023/01/27

Version: 4.2.19

POC Thresholds

Low Flow Threshold for POC1:	50 Percent of the 2 Year
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High Flow Threshold for POC1:	50 Year
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Low Flow Threshold for POC2:	50 Percent of the 2 Year
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High Flow Threshold for POC2:	50 Year
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Low Flow Threshold for POC3:	50 Percent of the 2 Year
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High Flow Threshold for POC3:	50 Year
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Low Flow Threshold for POC4:	50 Percent of the 2 Year
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High Flow Threshold for POC4:	50 Year
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Low Flow Threshold for POC5:	50 Percent of the 2 Year
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High Flow Threshold for POC5:	50 Year
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Low Flow Threshold for POC6:	50 Percent of the 2 Year
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High Flow Threshold for POC6:	50 Year
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Landuse Basin Data

Predeveloped Land Use

Pre-Developed (ORANGE)

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
A B, Forest, Mod	0.53
Pervious Total	0.53
Impervious Land Use	acre
Impervious Total	0
Basin Total	0.53

Pre-Developed (BLUE)

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
A B, Forest, Mod	0.18
Pervious Total	0.18
Impervious Land Use	acre
Impervious Total	0
Basin Total	0.18

Pre-Developed (RED)

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
A B, Forest, Mod	0.63
Pervious Total	0.63
Impervious Land Use	acre
Impervious Total	0
Basin Total	0.63

Pre-Developed (PURPLE)

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
A B, Forest, Mod	0.63
Pervious Total	0.63
Impervious Land Use	acre
Impervious Total	0
Basin Total	0.63

Pre-Developed (GREEN)

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
A B, Forest, Mod	0.81
Pervious Total	0.81
Impervious Land Use	acre
Impervious Total	0
Basin Total	0.81

Pre-Developed (YELLOW)

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
A B, Forest, Mod	0.41
Pervious Total	0.41
Impervious Land Use	acre
Impervious Total	0
Basin Total	0.41

Mitigated Land Use

WEST ROAD (RED)

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
A B, Pasture, Flat	0.19
Pervious Total	0.19
Impervious Land Use	acre
ROADS FLAT	0.44
Impervious Total	0.44
Basin Total	0.63

WEST ROOFS (ORANGE)

Bypass:	No
GroundWater:	No
Pervious Land Use A B, Pasture, Flat	acre 0.26
Pervious Total	0.26
Impervious Land Use ROOF TOPS FLAT	acre 0.27
Impervious Total	0.27
Basin Total	0.53

SOUTH ROOFS (BLUE)

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
Pervious Total	0
Impervious Land Use	acre
ROOF TOPS FLAT	0.18
Impervious Total	0.18
Basin Total	0.18

SOUTH ROAD (PURPLE)

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
A B, Pasture, Flat	0.18
Pervious Total	0.18
Impervious Land Use	acre
ROADS FLAT	0.36
ROOF TOPS FLAT	0.09
Impervious Total	0.45
Basin Total	0.63

TUMWATER BLVD (YELLOW)

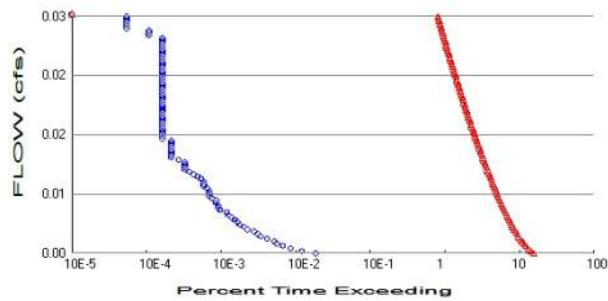
Bypass:	No
GroundWater:	No
Pervious Land Use A B, Pasture, Flat	acre 0.04
Pervious Total	0.04
Impervious Land Use ROADS FLAT	acre 0.37
Impervious Total	0.37
Basin Total	0.41

SOUTH SHEET FLOW (GREEN)

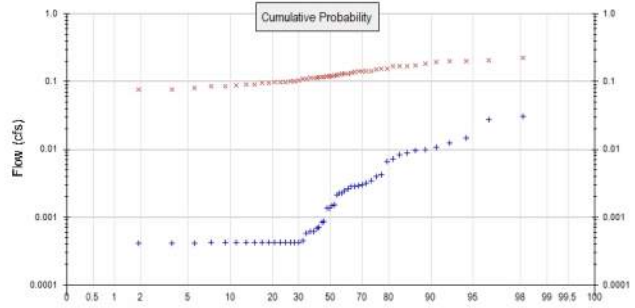
Bypass:	No
GroundWater:	No
Pervious Land Use	acre
A B, Pasture, Flat	0.67
Pervious Total	0.67
Impervious Land Use	acre
ROADS FLAT	0.14
Impervious Total	0.14
Basin Total	0.81

Analysis Results

POC 1



+ Predeveloped x Mitigated



Predeveloped Landuse Totals for POC #1

Total Pervious Area: 0.53
Total Impervious Area: 0

Mitigated Landuse Totals for POC #1

Total Pervious Area: 0.26
Total Impervious Area: 0.27

Flow Frequency Method: Log Pearson Type III 17B

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	Flow(cfs)
2 year	0.001445
5 year	0.004553
10 year	0.008725
25 year	0.018155
50 year	0.029789
100 year	0.0472

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	Flow(cfs)
2 year	0.121632
5 year	0.154561
10 year	0.176115
25 year	0.203246
50 year	0.223459
100 year	0.243722

Annual Peaks

Annual Peaks for Predeveloped and Mitigated. POC #1

Year	Predeveloped	Mitigated
1956	0.003	0.113
1957	0.000	0.167
1958	0.001	0.098
1959	0.001	0.118
1960	0.003	0.141
1961	0.008	0.111
1962	0.000	0.096
1963	0.004	0.196
1964	0.007	0.127
1965	0.002	0.110

1966	0.001	0.086
1967	0.003	0.096
1968	0.001	0.082
1969	0.000	0.085
1970	0.000	0.089
1971	0.003	0.091
1972	0.007	0.129
1973	0.000	0.087
1974	0.003	0.143
1975	0.001	0.150
1976	0.002	0.130
1977	0.000	0.172
1978	0.001	0.139
1979	0.000	0.155
1980	0.001	0.103
1981	0.003	0.156
1982	0.001	0.142
1983	0.001	0.224
1984	0.004	0.101
1985	0.000	0.099
1986	0.001	0.113
1987	0.027	0.205
1988	0.000	0.075
1989	0.000	0.118
1990	0.012	0.169
1991	0.015	0.186
1992	0.000	0.099
1993	0.000	0.077
1994	0.000	0.077
1995	0.002	0.116
1996	0.009	0.132
1997	0.010	0.119
1998	0.001	0.121
1999	0.010	0.142
2000	0.000	0.134
2001	0.000	0.102
2002	0.002	0.117
2003	0.000	0.122
2004	0.003	0.198
2005	0.000	0.114
2006	0.030	0.202
2007	0.011	0.167
2008	0.000	0.122

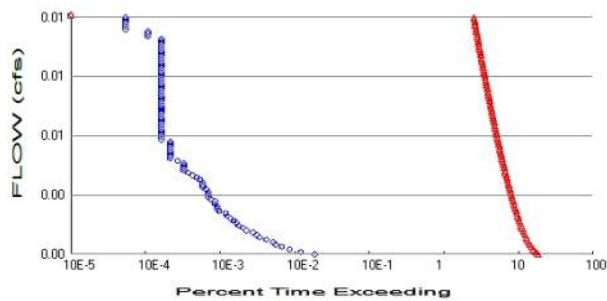
Ranked Annual Peaks

Ranked Annual Peaks for Predeveloped and Mitigated. POC #1

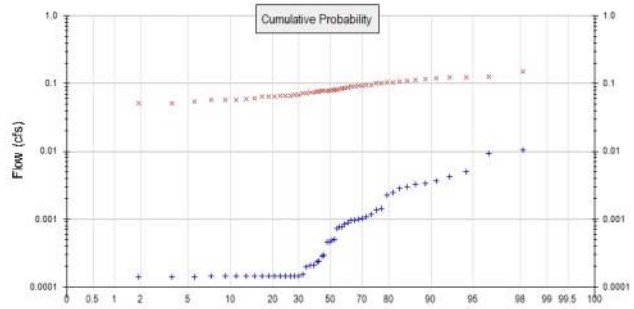
Rank	Predeveloped	Mitigated
1	0.0304	0.2240
2	0.0273	0.2052
3	0.0148	0.2023
4	0.0125	0.1980
5	0.0109	0.1956
6	0.0099	0.1859
7	0.0095	0.1722
8	0.0088	0.1691
9	0.0084	0.1669
10	0.0073	0.1667
11	0.0066	0.1561

12	0.0042	0.1547
13	0.0040	0.1500
14	0.0035	0.1425
15	0.0032	0.1416
16	0.0030	0.1415
17	0.0029	0.1406
18	0.0028	0.1387
19	0.0028	0.1345
20	0.0026	0.1322
21	0.0024	0.1302
22	0.0023	0.1291
23	0.0022	0.1266
24	0.0022	0.1225
25	0.0015	0.1222
26	0.0015	0.1209
27	0.0013	0.1189
28	0.0013	0.1182
29	0.0009	0.1176
30	0.0008	0.1174
31	0.0007	0.1157
32	0.0007	0.1135
33	0.0006	0.1133
34	0.0006	0.1132
35	0.0006	0.1114
36	0.0005	0.1100
37	0.0004	0.1035
38	0.0004	0.1015
39	0.0004	0.1006
40	0.0004	0.0987
41	0.0004	0.0985
42	0.0004	0.0980
43	0.0004	0.0962
44	0.0004	0.0960
45	0.0004	0.0910
46	0.0004	0.0893
47	0.0004	0.0867
48	0.0004	0.0860
49	0.0004	0.0853
50	0.0004	0.0816
51	0.0004	0.0770
52	0.0004	0.0767
53	0.0004	0.0754

POC 2



+ Predeveloped x Mitigated



Predeveloped Landuse Totals for POC #2

Total Pervious Area: 0.18
Total Impervious Area: 0

Mitigated Landuse Totals for POC #2

Total Pervious Area: 0
Total Impervious Area: 0.18

Flow Frequency Method: Log Pearson Type III 17B

Flow Frequency Return Periods for Predeveloped. POC #2

Return Period	Flow(cfs)
2 year	0.000491
5 year	0.001546
10 year	0.002963
25 year	0.006166
50 year	0.010117
100 year	0.01603

Flow Frequency Return Periods for Mitigated. POC #2

Return Period	Flow(cfs)
2 year	0.080253
5 year	0.100467
10 year	0.113269
25 year	0.128968
50 year	0.140394
100 year	0.151642

Annual Peaks

Annual Peaks for Predeveloped and Mitigated. POC #2

Year	Predeveloped	Mitigated
1956	0.001	0.073
1957	0.000	0.110
1958	0.000	0.063
1959	0.000	0.078
1960	0.001	0.094
1961	0.003	0.074
1962	0.000	0.064
1963	0.001	0.123
1964	0.002	0.083
1965	0.001	0.071
1966	0.000	0.057

1967	0.001	0.064
1968	0.000	0.054
1969	0.000	0.057
1970	0.000	0.059
1971	0.001	0.060
1972	0.002	0.086
1973	0.000	0.058
1974	0.001	0.095
1975	0.001	0.100
1976	0.001	0.085
1977	0.000	0.115
1978	0.000	0.092
1979	0.000	0.103
1980	0.000	0.069
1981	0.001	0.101
1982	0.000	0.094
1983	0.000	0.149
1984	0.001	0.065
1985	0.000	0.066
1986	0.000	0.073
1987	0.009	0.122
1988	0.000	0.050
1989	0.000	0.079
1990	0.004	0.107
1991	0.005	0.120
1992	0.000	0.066
1993	0.000	0.051
1994	0.000	0.051
1995	0.001	0.077
1996	0.003	0.088
1997	0.003	0.079
1998	0.000	0.081
1999	0.003	0.091
2000	0.000	0.090
2001	0.000	0.068
2002	0.001	0.078
2003	0.000	0.082
2004	0.001	0.127
2005	0.000	0.076
2006	0.010	0.116
2007	0.004	0.105
2008	0.000	0.081

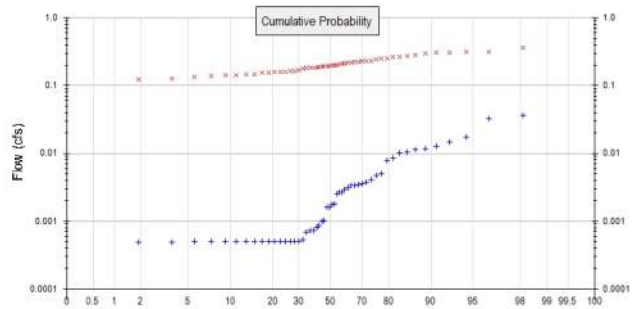
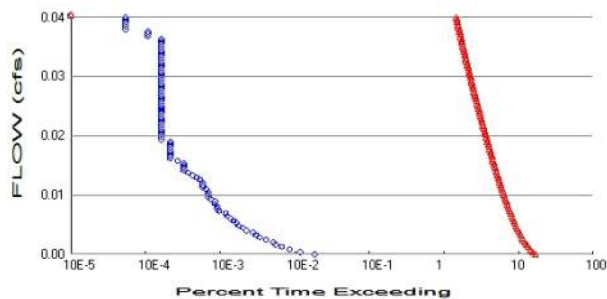
Ranked Annual Peaks

Ranked Annual Peaks for Predeveloped and Mitigated. POC #2

Rank	Predeveloped	Mitigated
1	0.0103	0.1493
2	0.0093	0.1269
3	0.0050	0.1227
4	0.0042	0.1223
5	0.0037	0.1196
6	0.0033	0.1160
7	0.0032	0.1148
8	0.0030	0.1096
9	0.0029	0.1067
10	0.0025	0.1051
11	0.0022	0.1030
12	0.0014	0.1014

13	0.0014	0.0999
14	0.0012	0.0950
15	0.0011	0.0943
16	0.0010	0.0937
17	0.0010	0.0921
18	0.0010	0.0914
19	0.0010	0.0896
20	0.0009	0.0881
21	0.0008	0.0859
22	0.0008	0.0853
23	0.0008	0.0830
24	0.0007	0.0817
25	0.0005	0.0814
26	0.0005	0.0806
27	0.0005	0.0793
28	0.0005	0.0788
29	0.0003	0.0784
30	0.0003	0.0782
31	0.0002	0.0772
32	0.0002	0.0757
33	0.0002	0.0743
34	0.0002	0.0732
35	0.0002	0.0728
36	0.0002	0.0712
37	0.0001	0.0689
38	0.0001	0.0677
39	0.0001	0.0658
40	0.0001	0.0657
41	0.0001	0.0652
42	0.0001	0.0641
43	0.0001	0.0640
44	0.0001	0.0634
45	0.0001	0.0603
46	0.0001	0.0589
47	0.0001	0.0578
48	0.0001	0.0573
49	0.0001	0.0568
50	0.0001	0.0542
51	0.0001	0.0513
52	0.0001	0.0511
53	0.0001	0.0503

POC 3



+ Predeveloped x Mitigated

Predeveloped Landuse Totals for POC #3

Total Pervious Area: 0.63
Total Impervious Area: 0

Mitigated Landuse Totals for POC #3

Total Pervious Area: 0.19
Total Impervious Area: 0.44

Flow Frequency Method: Log Pearson Type III 17B

Flow Frequency Return Periods for Predeveloped. POC #3

Return Period	Flow(cfs)
2 year	0.001718
5 year	0.005412
10 year	0.010371
25 year	0.02158
50 year	0.03541
100 year	0.056106

Flow Frequency Return Periods for Mitigated. POC #3

Return Period	Flow(cfs)
2 year	0.197434
5 year	0.248431
10 year	0.280851
25 year	0.320721
50 year	0.349813
100 year	0.378502

Annual Peaks

Annual Peaks for Predeveloped and Mitigated. POC #3

Year	Predeveloped	Mitigated
1956	0.003	0.181
1957	0.001	0.270
1958	0.001	0.157
1959	0.001	0.192
1960	0.003	0.229
1961	0.010	0.182
1962	0.000	0.157
1963	0.005	0.308
1964	0.009	0.203
1965	0.003	0.176
1966	0.001	0.140

1967	0.003	0.156
1968	0.001	0.133
1969	0.001	0.139
1970	0.001	0.145
1971	0.004	0.148
1972	0.008	0.210
1973	0.001	0.141
1974	0.004	0.232
1975	0.002	0.244
1976	0.003	0.210
1977	0.000	0.281
1978	0.002	0.226
1979	0.001	0.252
1980	0.001	0.169
1981	0.004	0.251
1982	0.002	0.231
1983	0.001	0.365
1984	0.005	0.161
1985	0.001	0.161
1986	0.002	0.181
1987	0.032	0.315
1988	0.001	0.123
1989	0.001	0.193
1990	0.015	0.267
1991	0.018	0.297
1992	0.000	0.161
1993	0.001	0.125
1994	0.000	0.125
1995	0.003	0.189
1996	0.010	0.215
1997	0.011	0.194
1998	0.001	0.197
1999	0.012	0.224
2000	0.001	0.219
2001	0.001	0.165
2002	0.003	0.191
2003	0.001	0.200
2004	0.003	0.316
2005	0.001	0.185
2006	0.036	0.304
2007	0.013	0.264
2008	0.001	0.199

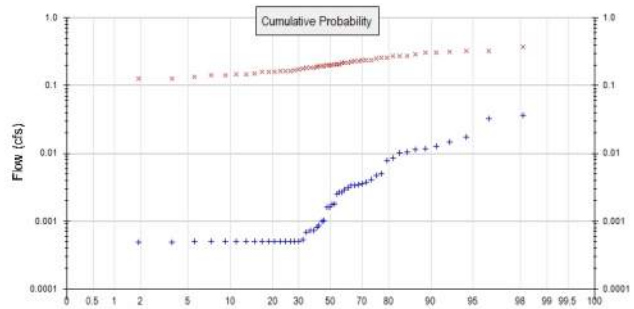
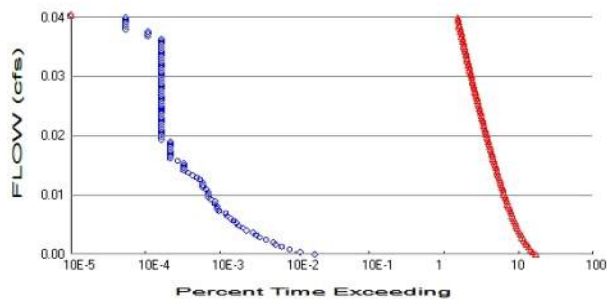
Ranked Annual Peaks

Ranked Annual Peaks for Predeveloped and Mitigated. POC #3

Rank	Predeveloped	Mitigated
1	0.0362	0.3650
2	0.0325	0.3158
3	0.0175	0.3148
4	0.0148	0.3083
5	0.0129	0.3043
6	0.0117	0.2971
7	0.0113	0.2806
8	0.0104	0.2696
9	0.0100	0.2669
10	0.0087	0.2637
11	0.0078	0.2519
12	0.0050	0.2508

13	0.0047	0.2444
14	0.0041	0.2323
15	0.0038	0.2306
16	0.0036	0.2291
17	0.0034	0.2255
18	0.0034	0.2237
19	0.0034	0.2191
20	0.0031	0.2154
21	0.0029	0.2102
22	0.0027	0.2101
23	0.0027	0.2030
24	0.0026	0.1996
25	0.0018	0.1990
26	0.0017	0.1970
27	0.0016	0.1938
28	0.0016	0.1926
29	0.0010	0.1917
30	0.0010	0.1912
31	0.0008	0.1886
32	0.0008	0.1849
33	0.0007	0.1816
34	0.0007	0.1815
35	0.0007	0.1809
36	0.0005	0.1764
37	0.0005	0.1685
38	0.0005	0.1655
39	0.0005	0.1614
40	0.0005	0.1609
41	0.0005	0.1606
42	0.0005	0.1571
43	0.0005	0.1568
44	0.0005	0.1565
45	0.0005	0.1479
46	0.0005	0.1447
47	0.0005	0.1413
48	0.0005	0.1401
49	0.0005	0.1389
50	0.0005	0.1327
51	0.0005	0.1255
52	0.0005	0.1250
53	0.0005	0.1229

POC 4



+ Predeveloped x Mitigated

Predeveloped Landuse Totals for POC #4

Total Pervious Area: 0.63
Total Impervious Area: 0

Mitigated Landuse Totals for POC #4

Total Pervious Area: 0.18
Total Impervious Area: 0.45

Flow Frequency Method: Log Pearson Type III 17B

Flow Frequency Return Periods for Predeveloped. POC #4

Return Period	Flow(cfs)
2 year	0.001718
5 year	0.005412
10 year	0.010371
25 year	0.02158
50 year	0.03541
100 year	0.056106

Flow Frequency Return Periods for Mitigated. POC #4

Return Period	Flow(cfs)
2 year	0.201823
5 year	0.253854
10 year	0.286922
25 year	0.32758
50 year	0.35724
100 year	0.386486

Annual Peaks

Annual Peaks for Predeveloped and Mitigated. POC #4

Year	Predeveloped	Mitigated
1956	0.003	0.185
1957	0.001	0.276
1958	0.001	0.161
1959	0.001	0.196
1960	0.003	0.234
1961	0.010	0.186
1962	0.000	0.160
1963	0.005	0.315
1964	0.009	0.208
1965	0.003	0.180
1966	0.001	0.143

1967	0.003	0.160
1968	0.001	0.136
1969	0.001	0.142
1970	0.001	0.148
1971	0.004	0.151
1972	0.008	0.215
1973	0.001	0.145
1974	0.004	0.238
1975	0.002	0.250
1976	0.003	0.215
1977	0.000	0.287
1978	0.002	0.231
1979	0.001	0.258
1980	0.001	0.172
1981	0.004	0.256
1982	0.002	0.236
1983	0.001	0.373
1984	0.005	0.165
1985	0.001	0.164
1986	0.002	0.185
1987	0.032	0.321
1988	0.001	0.126
1989	0.001	0.197
1990	0.015	0.272
1991	0.018	0.304
1992	0.000	0.165
1993	0.001	0.128
1994	0.000	0.128
1995	0.003	0.193
1996	0.010	0.220
1997	0.011	0.198
1998	0.001	0.201
1999	0.012	0.228
2000	0.001	0.224
2001	0.001	0.169
2002	0.003	0.196
2003	0.001	0.204
2004	0.003	0.323
2005	0.001	0.189
2006	0.036	0.310
2007	0.013	0.269
2008	0.001	0.204

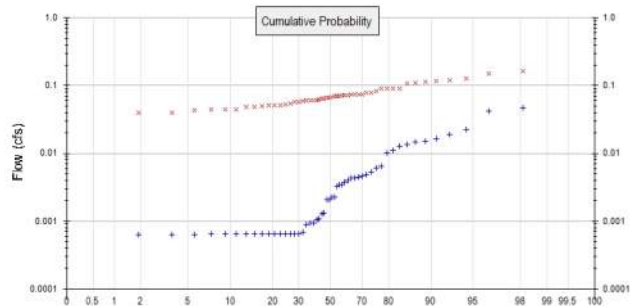
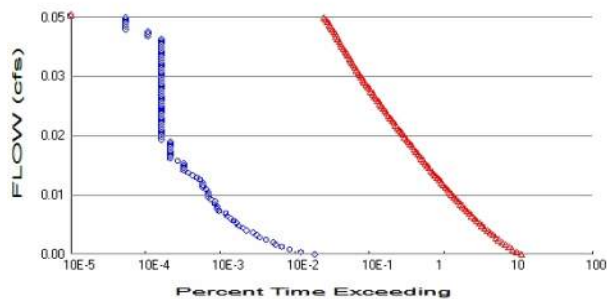
Ranked Annual Peaks

Ranked Annual Peaks for Predeveloped and Mitigated. POC #4

Rank	Predeveloped	Mitigated
1	0.0362	0.3733
2	0.0325	0.3225
3	0.0175	0.3208
4	0.0148	0.3147
5	0.0129	0.3096
6	0.0117	0.3035
7	0.0113	0.2870
8	0.0104	0.2756
9	0.0100	0.2725
10	0.0087	0.2692
11	0.0078	0.2576
12	0.0050	0.2562

13	0.0047	0.2499
14	0.0041	0.2376
15	0.0038	0.2358
16	0.0036	0.2343
17	0.0034	0.2306
18	0.0034	0.2285
19	0.0034	0.2241
20	0.0031	0.2203
21	0.0029	0.2149
22	0.0027	0.2148
23	0.0027	0.2076
24	0.0026	0.2041
25	0.0018	0.2035
26	0.0017	0.2014
27	0.0016	0.1982
28	0.0016	0.1970
29	0.0010	0.1960
30	0.0010	0.1955
31	0.0008	0.1929
32	0.0008	0.1892
33	0.0007	0.1857
34	0.0007	0.1854
35	0.0007	0.1848
36	0.0005	0.1802
37	0.0005	0.1724
38	0.0005	0.1692
39	0.0005	0.1650
40	0.0005	0.1645
41	0.0005	0.1642
42	0.0005	0.1605
43	0.0005	0.1603
44	0.0005	0.1600
45	0.0005	0.1512
46	0.0005	0.1480
47	0.0005	0.1445
48	0.0005	0.1433
49	0.0005	0.1420
50	0.0005	0.1357
51	0.0005	0.1283
52	0.0005	0.1278
53	0.0005	0.1257

POC 5



+ Predeveloped x Mitigated

Predeveloped Landuse Totals for POC #5

Total Pervious Area: 0.81
Total Impervious Area: 0

Mitigated Landuse Totals for POC #5

Total Pervious Area: 0.67
Total Impervious Area: 0.14

Flow Frequency Method: Log Pearson Type III 17B

Flow Frequency Return Periods for Predeveloped. POC #5

Return Period	Flow(cfs)
2 year	0.002208
5 year	0.006958
10 year	0.013334
25 year	0.027746
50 year	0.045527
100 year	0.072136

Flow Frequency Return Periods for Mitigated. POC #5

Return Period	Flow(cfs)
2 year	0.066652
5 year	0.089808
10 year	0.106342
25 year	0.128643
50 year	0.146307
100 year	0.164892

Annual Peaks

Annual Peaks for Predeveloped and Mitigated. POC #5

Year	Predeveloped	Mitigated
1956	0.004	0.066
1957	0.001	0.091
1958	0.001	0.057
1959	0.001	0.061
1960	0.004	0.073
1961	0.013	0.069
1962	0.001	0.050
1963	0.006	0.125
1964	0.011	0.078
1965	0.004	0.072
1966	0.001	0.045

1967	0.004	0.052
1968	0.001	0.043
1969	0.001	0.044
1970	0.001	0.048
1971	0.005	0.048
1972	0.010	0.069
1973	0.001	0.045
1974	0.005	0.074
1975	0.002	0.078
1976	0.003	0.072
1977	0.001	0.089
1978	0.002	0.073
1979	0.001	0.082
1980	0.001	0.054
1981	0.005	0.089
1982	0.002	0.073
1983	0.001	0.116
1984	0.006	0.058
1985	0.001	0.051
1986	0.002	0.067
1987	0.042	0.151
1988	0.001	0.039
1989	0.001	0.061
1990	0.019	0.114
1991	0.023	0.110
1992	0.001	0.051
1993	0.001	0.040
1994	0.001	0.040
1995	0.003	0.060
1996	0.013	0.071
1997	0.015	0.074
1998	0.001	0.063
1999	0.015	0.090
2000	0.001	0.070
2001	0.001	0.053
2002	0.003	0.061
2003	0.001	0.064
2004	0.004	0.118
2005	0.001	0.059
2006	0.046	0.163
2007	0.017	0.106
2008	0.001	0.064

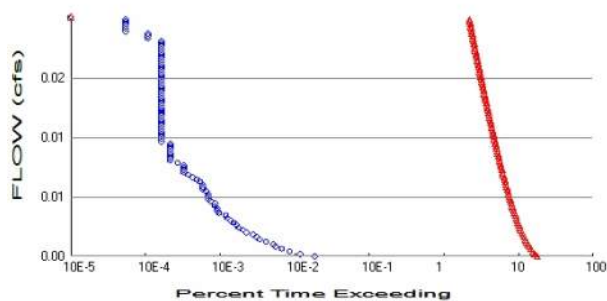
Ranked Annual Peaks

Ranked Annual Peaks for Predeveloped and Mitigated. POC #5

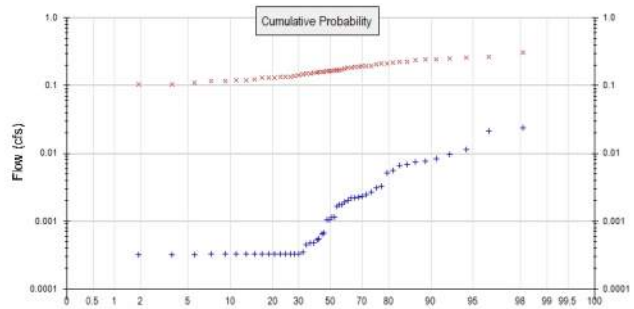
Rank	Predeveloped	Mitigated
1	0.0465	0.1629
2	0.0418	0.1513
3	0.0226	0.1252
4	0.0190	0.1184
5	0.0166	0.1162
6	0.0151	0.1138
7	0.0146	0.1096
8	0.0134	0.1055
9	0.0129	0.0913
10	0.0111	0.0898
11	0.0101	0.0894
12	0.0064	0.0890

13	0.0061	0.0823
14	0.0053	0.0785
15	0.0049	0.0781
16	0.0046	0.0741
17	0.0044	0.0739
18	0.0043	0.0734
19	0.0043	0.0731
20	0.0039	0.0729
21	0.0037	0.0723
22	0.0035	0.0718
23	0.0034	0.0707
24	0.0033	0.0697
25	0.0023	0.0692
26	0.0022	0.0688
27	0.0021	0.0668
28	0.0021	0.0659
29	0.0013	0.0637
30	0.0013	0.0635
31	0.0011	0.0628
32	0.0010	0.0613
33	0.0009	0.0611
34	0.0009	0.0610
35	0.0009	0.0600
36	0.0007	0.0589
37	0.0007	0.0579
38	0.0007	0.0566
39	0.0007	0.0539
40	0.0007	0.0527
41	0.0007	0.0518
42	0.0006	0.0512
43	0.0006	0.0511
44	0.0006	0.0499
45	0.0006	0.0483
46	0.0006	0.0483
47	0.0006	0.0450
48	0.0006	0.0446
49	0.0006	0.0444
50	0.0006	0.0429
51	0.0006	0.0400
52	0.0006	0.0398
53	0.0006	0.0391

POC 6



+ Predeveloped x Mitigated



Predeveloped Landuse Totals for POC #6

Total Pervious Area: 0.41
Total Impervious Area: 0

Mitigated Landuse Totals for POC #6

Total Pervious Area: 0.04
Total Impervious Area: 0.37

Flow Frequency Method: Log Pearson Type III 17B

Flow Frequency Return Periods for Predeveloped. POC #6

Return Period	Flow(cfs)
2 year	0.001118
5 year	0.003522
10 year	0.00675
25 year	0.014044
50 year	0.023044
100 year	0.036513

Flow Frequency Return Periods for Mitigated. POC #6

Return Period	Flow(cfs)
2 year	0.165232
5 year	0.207111
10 year	0.233658
25 year	0.266235
50 year	0.289962
100 year	0.313328

Annual Peaks

Annual Peaks for Predeveloped and Mitigated. POC #6

Year	Predeveloped	Mitigated
1956	0.002	0.151
1957	0.000	0.226
1958	0.001	0.131
1959	0.001	0.161
1960	0.002	0.193
1961	0.007	0.153
1962	0.000	0.132
1963	0.003	0.254
1964	0.006	0.171
1965	0.002	0.147
1966	0.001	0.118

1967	0.002	0.132
1968	0.000	0.111
1969	0.000	0.117
1970	0.000	0.121
1971	0.002	0.124
1972	0.005	0.177
1973	0.000	0.119
1974	0.003	0.195
1975	0.001	0.205
1976	0.002	0.176
1977	0.000	0.236
1978	0.001	0.189
1979	0.000	0.212
1980	0.001	0.142
1981	0.002	0.209
1982	0.001	0.194
1983	0.000	0.307
1984	0.003	0.134
1985	0.000	0.135
1986	0.001	0.150
1987	0.021	0.255
1988	0.000	0.103
1989	0.000	0.162
1990	0.010	0.221
1991	0.011	0.247
1992	0.000	0.135
1993	0.000	0.105
1994	0.000	0.105
1995	0.002	0.159
1996	0.007	0.181
1997	0.007	0.163
1998	0.000	0.166
1999	0.008	0.188
2000	0.000	0.184
2001	0.000	0.139
2002	0.002	0.161
2003	0.000	0.168
2004	0.002	0.262
2005	0.000	0.156
2006	0.024	0.243
2007	0.008	0.217
2008	0.000	0.167

Ranked Annual Peaks

Ranked Annual Peaks for Predeveloped and Mitigated. POC #6

Rank	Predeveloped	Mitigated
1	0.0235	0.3069
2	0.0211	0.2620
3	0.0114	0.2547
4	0.0096	0.2539
5	0.0084	0.2469
6	0.0076	0.2429
7	0.0074	0.2360
8	0.0068	0.2256
9	0.0065	0.2206
10	0.0056	0.2175
11	0.0051	0.2118
12	0.0033	0.2090

13	0.0031	0.2054
14	0.0027	0.1953
15	0.0025	0.1939
16	0.0023	0.1926
17	0.0022	0.1894
18	0.0022	0.1879
19	0.0022	0.1843
20	0.0020	0.1811
21	0.0019	0.1767
22	0.0018	0.1756
23	0.0017	0.1707
24	0.0017	0.1678
25	0.0012	0.1673
26	0.0011	0.1656
27	0.0010	0.1629
28	0.0010	0.1620
29	0.0007	0.1612
30	0.0006	0.1607
31	0.0006	0.1586
32	0.0005	0.1555
33	0.0005	0.1527
34	0.0005	0.1510
35	0.0004	0.1503
36	0.0004	0.1468
37	0.0003	0.1417
38	0.0003	0.1392
39	0.0003	0.1353
40	0.0003	0.1350
41	0.0003	0.1345
42	0.0003	0.1318
43	0.0003	0.1316
44	0.0003	0.1308
45	0.0003	0.1241
46	0.0003	0.1213
47	0.0003	0.1188
48	0.0003	0.1178
49	0.0003	0.1167
50	0.0003	0.1115
51	0.0003	0.1055
52	0.0003	0.1051
53	0.0003	0.1033

Model Default Modifications

Total of 0 changes have been made.

PERLND Changes

No PERLND changes have been made.

IMPLND Changes

No IMPLND changes have been made.

Appendix
Predeveloped Schematic



Mitigated Schematic



Disclaimer

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Olympia, WA. 98501
Toll Free 1(866)943-0304
Local (360)943-0304

www.clearcreeksolutions.com

APPENDIX 5

ENGINEERING PLANS

JSA CIVIL

Engineering | Planning | Management

TUMWATER BOULEVARD TOWNHOME CONDOMINIUMS
SITE PLAN REVIEW
TUMWATER, WASHINGTON

APPLICANT

TENINO LAND COMPANY, LLC
17348 MARSH RD SW
TENINO, WA 98589
PHONE: 360.264.1360
CONTACT: TODD HANSEN

ENGINEER

JSA CIVIL, LLC
111 TUMWATER BLVD SE, SUITE B203
TUMWATER, WA 98501
PHONE: 360.515.9600
CONTACT: WHITNEY DUNLAP, PE

ARCHITECT

NORTHWEST HOME DESIGNING, INC.
P.O. BOX 88103
STELLACOOM, WA 98388
PHONE: 253.584.6309

LANDSCAPE ARCHITECT

SCJ ALLIANCE
8730 TALLON LANE NE, SUITE 200
LACEY, WAS 98516
PHONE: 360.352.1465
CONTACT: JEFF GLANDER

GEOTECHNICAL

INSIGHT GEOLOGIC, INC
1015 4TH AVENUE E
OLYMPIA, WA 98506
PHONE: 360.754.2128
CONTACT: WILLIAM E. HALBERT

SURVEYOR

MTN2COAST, LLC
2320 MOTTMAN RD SW, SUITE 106
TUMWATER, WA 98512
PHONE: 360.688.1949
CONTACT: SETH PRIGGE

GOVERNING AGENCY

CITY OF TUMWATER
PHONE: 360.754.5855

UTILITIES

SEWER/WATER
CITY OF TUMWATER
PHONE: 360.754.4140

POWER/GAS
PUGET SOUND ENERGY
PHONE: 888.225.5773

CABLE/PHONE
COMCAST
PHONE: 800.934.6489
CENTURYLINK
PHONE: 888.963.6665

REFUSE
LEMAY PACIFIC DISPOSAL
PHONES: 360.923.0111

SITE INFORMATION

ADDRESS: 715 DENNIS ST SE
934 TUMWATER BLVD SE
PARCEL: 79300001100 & 79300001200
ACRES: ±10.77
ZONING: SINGLE FAMILY MEDIUM DENSITY RESIDENTIAL (SFM & SFM2)
WITH AIRPORT OVERLAY

LEGAL DESCRIPTION

SEE ALTA/NSPS LAND TITLE SURVEY

HORIZONTAL DATUM

HELD CENTER OF SECTION (TC POINT 6475) POSITION AS BASE POINT
FOR THURSTON COUNTY DATUM. SCALED GPS OBSERVATIONS ABOUT
THIS POINT FOR GROUND SCALE. CSF FOR PROJECT IS 0.999935457.
PROJECT IS ON GROUND SCALE AND WSPC, S2, NAD 83/91.

VERTICAL DATUM

VERTICAL DATUM IS NGVD 29 BASED ON TIES TO THURSTON COUNTY
MONUMENTS OLY-AIR ELEV 189.20 AND NGS-Q-531 ELEV 186.51.

TOWNSHIP, RANGE, AND SECTION

A PORTION OF THE NORTH HALF OF THE SOUTHEAST QUARTER OF
SECTION 2, TOWNSHIP 17 NORTH, RANGE 2 WEST, WILLAMETTE MERIDIAN

SHEET INDEX

SHEET	TITLE
CV-01	COVER SHEET
SV-01	ALTA/NSPS LAND TITLE SURVEY
SV-02	ALTA/NSPS LAND TITLE SURVEY
SV-03	ALTA/NSPS LAND TITLE SURVEY
PL-01	PRELIMINARY PLAT MAP
SP-01	PRELIMINARY SITE PLAN
XS-01	PRELIMINARY ROAD SECTIONS
CG-01	PRELIMINARY GRADING PLAN
SD-01	PRELIMINARY STORMWATER PLAN
WT-01	PRELIMINARY WATER PLAN
SS-01	PRELIMINARY SEWER PLAN
FR-01	PRELIMINARY FRONTAGE IMPROVEMENTS
FR-02	PRELIMINARY FRONTAGE GRADING & STORM
LS-01	OVERALL LANDSCAPE PLAN
LS-02	SOUTH LANDSCAPE PLAN
LS-03	NORTH LANDSCAPE PLAN
LS-04	LANDSCAPE DETAILS
IR-01	OVERALL IRRIGATION PLAN
IR-02	SOUTH IRRIGATION PLAN
IR-03	NORTH IRRIGATION PLAN
IR-04	IRRIGATION DETAILS
IR-05	IRRIGATION DETAILS

GEOTECHNICAL & WABO INSPECTION NOTE:

THE CITY OF TUMWATER REQUIRES THAT THE FIRM PROVIDING THE SOILS REPORT, INSIGHT
GEOLOGIC, CONDUCT THE SITE INSPECTIONS AS DEFINED IN THE REPORT. THE CITY ALSO
REQUIRES THAT IN ADDITION TO THE SOILS ENGINEERING FIRM, A WABO REGISTERED
SPECIAL INSPECTOR WITH EXPERIENCE WITH SOIL GRADING BE EMPLOYED. BY THE OWNER,
TO CONDUCT COMPACTION TESTING FOR THE BUILDING PADS AND THE REQUIRED FIRE
LANES. THE SPECIAL INSPECTOR SHALL NOT BE THE GEOTECHNICAL FIRM. THE CIVIL
ENGINEER OF RECORD OR AN EMPLOYEE OF THE CONTRACTOR. ALL GRADING WORK SHALL
BE CONDUCTED IN ACCORDANCE WITH THE SOILS REPORT PREPARED BY INSIGHT
GEOLOGIC. COMPACTION TESTING OF THE SOILS UNDER THE FIRE LANES AND THE BUILDING
FOUNDATIONS AND UTILITY TRENCHES SHALL BE VERIFIED BY INSIGHT GEOLOGIC AND THE
WABO SPECIAL INSPECTOR.

INADVERTENT DISCOVERY NOTE:

WHEN AN UNANTICIPATED DISCOVERY OF PROTECTED CULTURAL MATERIAL (E.G., BONES,
SHELLS, STONE TOOLS, BEADS, CERAMICS, OLD BOTTLES, HEARTHES, ETC.) OR HUMAN
REMAINS ARE DISCOVERED, THE PROPERTY OWNER OR CONTRACTOR WILL IMMEDIATELY
STOP ALL WORK, COMPLETELY SECURE THE LOCATION, AND CONTACT THE WASHINGTON
STATE DEPARTMENT OF ARCHAEOLOGY AND HISTORIC PRESERVATION AND OTHER
CONTACTS AS IDENTIFIED IN THE CITY OF TUMWATER STANDARD INADVERTENT
ARCHAEOLOGICAL AND HISTORIC RESOURCES DISCOVERY PLAN. THE INDIVIDUAL OR
REPRESENTATIVE WHOM THE PERMIT WAS ISSUED TO MUST SEND WRITTEN NOTIFICATION
OF THE INADVERTENT DISCOVERY TO THE CITY OF TUMWATER DEPARTMENT OF COMMUNITY
DEVELOPMENT.

SURVEY MONUMENT NOTE

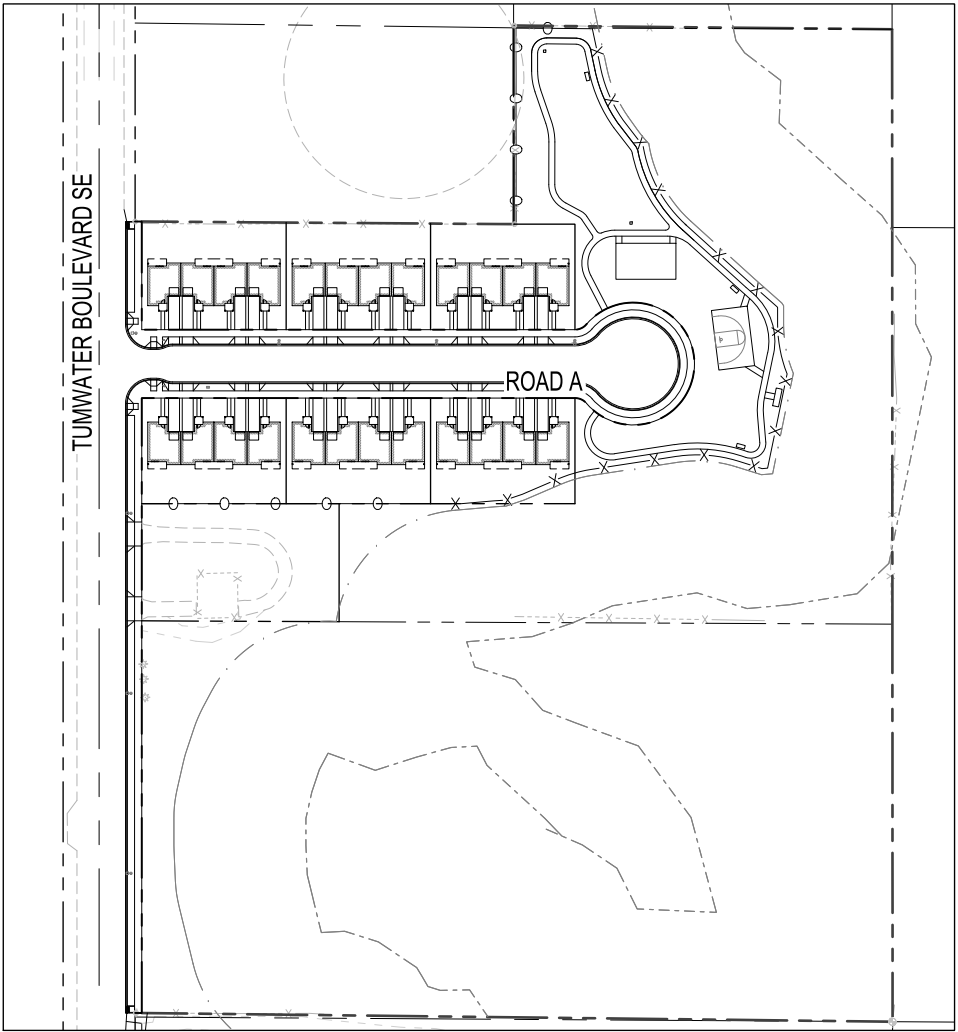
THE PROFESSIONAL LAND SURVEYOR RESPONSIBLE FOR THE SURVEYING OF THE PROJECT
MUST OBTAIN A PERMIT FROM DNR BEFORE ANY MONUMENTS ARE DISTURBED.

DEWATERING NOTE

THE CONTRACTOR SHALL UTILIZE APPROPRIATE DEWATERING SYSTEMS AND TECHNIQUES TO
MAINTAIN THE EXCAVATED AREA SUFFICIENTLY DRY FROM GROUNDWATER AND/OR
SURFACE RUNOFF SO AS NOT TO ADVERSELY AFFECT CONSTRUCTION PROCEDURES OR
CAUSE EXCESSIVE DISTURBANCE OF UNDERLYING NATURAL GROUND. THE CONTRACTOR
SHALL REPAIR ANY DAMAGE RESULTING FROM THE FAILURE OF THE DEWATERING
OPERATIONS OR FROM A FAILURE TO MAINTAIN ALL THE AREAS OF WORK IN A SUITABLE
DRY CONDITION. UNLESS OTHERWISE SPECIFIED, CONTINUE DEWATERING UNINTERRUPTED
UNTIL THE STRUCTURES, PIPES, AND APPURTENANCES TO BE BUILT HAVE BEEN PROPERLY
INSTALLED, BACKFILLED, AND COMPACTED. WHERE SUBGRADE MATERIALS ARE UNABLE TO
MEET THE SUBGRADE DENSITY REQUIREMENTS DUE TO IMPROPER DEWATERING TECHNIQUES,
REMOVE AND REPLACE THE MATERIALS AS DIRECTED BY THE ENGINEER.

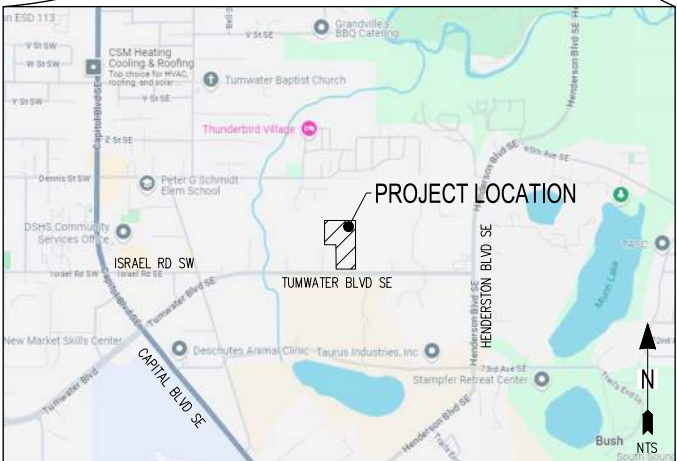
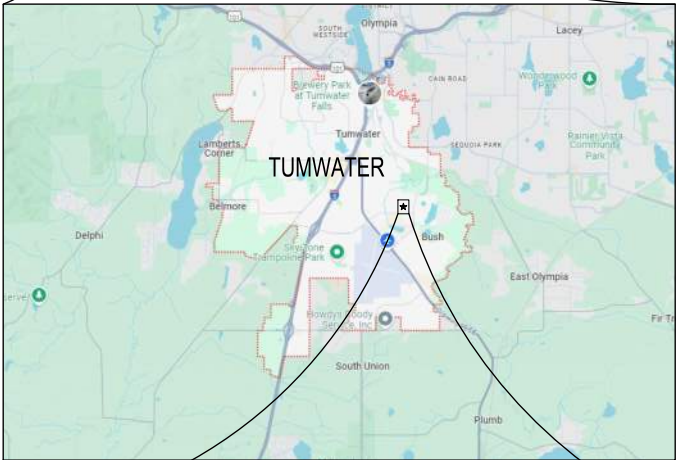
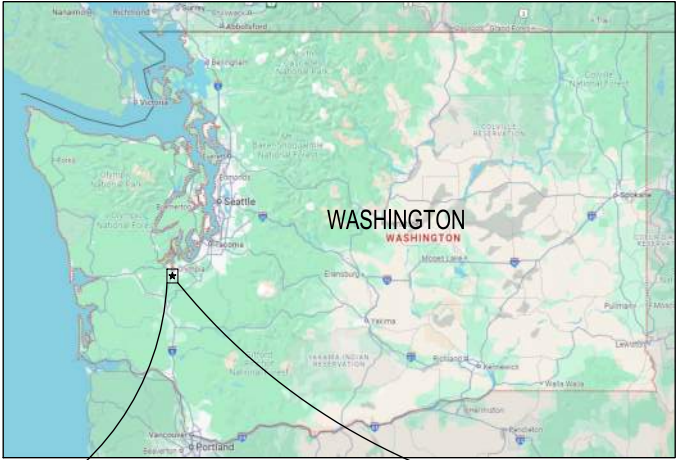
TRAFFIC CONTROL NOTE

THE CONTRACTOR SHALL PROVIDE ALL FLAGGERS, SIGNS, AND OTHER TRAFFIC CONTROL
DEVICES AS NECESSARY TO COMPLETE THE WORK. THE CONTRACTOR SHALL ERECT AND
MAINTAIN ALL CONSTRUCTION SIGNS, WARNING SIGNS, DETOUR SIGNS, AND OTHER TRAFFIC
CONTROL DEVICES NECESSARY TO WARN AND PROTECT THE PUBLIC AT ALL TIMES FROM
INJURY OR DAMAGE AS A RESULT OF THE CONTRACTOR'S OPERATIONS THAT MAY OCCUR
IN HIGHWAYS, ROADS, OR STREETS. NO WORK SHALL BE DONE ON OR ADJACENT TO THE
ROADWAY UNTIL ALL NECESSARY SIGNS AND TRAFFIC CONTROL DEVICES ARE IN-PLACE.
THE CONTRACTOR SHALL NOT CLOSE DOWN THROUGH TRAFFIC ON CITY/COUNTY/STATE
ROADS. ACCESS FOR BOTH VEHICULAR AND PEDESTRIAN TRAFFIC SHALL BE MAINTAINED
AT ALL TIMES, EXCEPT WHERE THE CONTRACTOR OBTAINS PERMISSION TO TEMPORARILY
CLOSE A SIDEWALK. THE CONTRACTOR SHALL SUBMIT A TRAFFIC CONTROL PLAN TO CITY
OF TUMWATER FOR REVIEW AND APPROVAL PRIOR TO STARTING ANY WORK IN THE
RIGHT-OF-WAY.



OVERALL SITE PLAN

1" = 80'



CALL BEFORE YOU DIG

THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE LOCATION
AND PROTECTION OF ALL EXISTING UTILITIES. THE CONTRACTOR SHALL
VERIFY ALL UTILITY LOCATIONS PRIOR TO CONSTRUCTION BY CALLING
THE UNDERGROUND LOCATE LINE AT 811 A MINIMUM OF 48 HOURS
PRIOR TO ANY EXCAVATION.



VERTICAL DATUM
NGVD 29

May 15, 2025 11:59:43am - User: Whitney Dunlap
N:\V - PROJECTS\100 TODD HANSEN\100.006 TUMWATER BLVD - MULTIFAMILY\CAD\100.006 CV-01.DWG

REVISIONS

PROJECT NO.
100.006

DRAWN
S. JANIK

CHECKED
W. DUNLAP

SUBMITTAL DATES

OTB DATE
—

JSA CIVIL
Engineering | Planning | Management
111 TUMWATER BLVD SE, SUITE B203
TUMWATER, WA 98501

STAMP
WHITNEY E. DUNLAP
PE
REGISTERED PROFESSIONAL ENGINEER
5/16/2025

TUMWATER BOULEVARD
TOWNHOME CONDOMINIUMS
715 DENNIS ST SE
TUMWATER, 98501

TENINO LAND COMPANY
17348 MARCH ST SW
TENINO, WA 98589

SHEET TITLE
COVER SHEET

SHEET
CV-01

ALTA/NSPS LAND TITLE SURVEY
A PORTION OF THE NORTH HALF OF THE SOUTHEAST QUARTER
OF SECTION 2, TOWNSHIP 17 NORTH, RANGE 2 WEST,
WILLAMETTE MERIDIAN

SCHEDULE B TITLE EXCEPTIONS

10. PUBLIC AND/OR PRIVATE EASEMENTS, IF ANY, IN EXISTENCE, OVER, UNDER, ALONG AND ACROSS THAT PORTION OF THE REAL ESTATE UNDER SEARCH LYING WITHIN VACATED STREET OR ALLEYWAY.
11. COVENANTS, CONDITIONS, RESTRICTIONS, RECITALS, RESERVATIONS, EASEMENTS, EASEMENT PROVISIONS, DEDICATIONS, BUILDING SETBACK LINES, NOTES, STATEMENTS, AND OTHER MATTERS, IF ANY, BUT OMITTING ANY COVENANTS OR RESTRICTIONS, IF ANY, INCLUDING BUT NOT LIMITED TO THOSE BASED UPON RACE, COLOR, RELIGION, SEX, SEXUAL ORIENTATION, FAMILIAL STATUS, MARITAL STATUS, DISABILITY, HANDICAP, NATIONAL ORIGIN, ANCESTRY, OR SOURCE OF INCOME, AS SET FORTH IN APPLICABLE STATE OR FEDERAL LAWS, EXCEPT TO THE EXTENT THAT SAID COVENANT OR RESTRICTION IS PERMITTED BY APPLICABLE LAW, AS SET FORTH ON SHORT SUBDIVISION NO. SS-1856:
RECORDING NO: 8306200008
12. EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO, AS GRANTED IN A DOCUMENT:
GRANTED TO: PUGET SOUND POWER & LIGHT COMPANY
PURPOSE: ELECTRIC TRANSMISSION AND/OR DISTRIBUTION LINE
RECORDING DATE: OCTOBER 23, 1984
RECORDING NO.: 8410230052
AFFECTS: PORTION OF LOT 1 OF SS-1856
13. COVENANTS, CONDITIONS, RESTRICTIONS, RECITALS, RESERVATIONS, EASEMENTS, EASEMENT PROVISIONS, DEDICATIONS, BUILDING SETBACK LINES, NOTES, STATEMENTS, AND OTHER MATTERS, IF ANY, BUT OMITTING ANY COVENANTS OR RESTRICTIONS, IF ANY, INCLUDING BUT NOT LIMITED TO THOSE BASED UPON RACE, COLOR, RELIGION, SEX, SEXUAL ORIENTATION, FAMILIAL STATUS, MARITALSTATUS, DISABILITY, HANDICAP, NATIONAL ORIGIN, ANCESTRY, OR SOURCE OF INCOME, AS SET FORTH IN APPLICABLE STATE OR FEDERALLAWS, EXCEPT TO THE EXTENT THAT SAID COVENANT OR RESTRICTION IS PERMITTED BY APPLICABLE LAW, AS SET FORTH ON LARGE LOT SUBDIVISION NO. LL-0605:
RECORDING NO: 9205080108
14. EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO, AS GRANTED IN A DOCUMENT:
GRANTED TO: CITY OF TUWMATER
PURPOSE: SLOPES FOR CUTS AND FILLS
RECORDING DATE: AUGUST 17, 1993
RECORDING NO.: 9308170286
AFFECTS: PORTION OF LOT 3 OF LL-0605
15. RIGHT TO MAKE NECESSARY SLOPES FOR CUTS OR FILLS UPON PROPERTY HEREIN DESCRIBED AS GRANTED OR RESERVED IN DEED
IN FAVOR OF: CITY OF TUMWATER
RECORDING DATE: JANUARY 18, 1994
RECORDING NO.: 9401180245
AFFECTS: PORTION OF LOT 12
16. EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO, AS GRANTED IN A DOCUMENT:
GRANTED TO: PUGET SOUND POWER & LIGHT COMPANY
PURPOSE: ELECTRIC TRANSMISSION AND/OR DISTRIBUTION LINE
RECORDING DATE: OCTOBER 4, 1994
RECORDING NO.: 9410040217
AFFECTS: PORTION OF LOT 1 OF SS-1856
17. MATTERS DISCLOSED BY SURVEY RECORDED UNDER AUDITOR'S FILE NO. 3035544, AS FOLLOWS: FENCE LINE ALONG THE WEST BOUNDARY OF LOTS 1 AND 2 OF SS-1856 DO NOT CONFORM TO THE PROPERTY LINE AS SHOWN.
18. EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO, AS GRANTED IN A DOCUMENT:
GRANTED TO: CITY OF TUMWATER
PURPOSE: WATER MAIN
RECORDING DATE: MAY 13, 2008
RECORDING NO.: 4010031
AFFECTS: PORTION OF LOT 2 OF LL-0605
19. AGREEMENT FOR WATER MAIN EXTENSION AND LATECOMERS FEES WITH THE CITY OF TUWMATER, AND THE TERMS AND CONDITIONS THEREOF:
AMOUNT: \$89,160.71
RECORDING DATE: NOVEMBER 18, 2011
RECORDING NO.: 4238612
AFFECTS: LOT 2 OF LL-0605
20. AGREEMENT FOR SANITARY SEWER EXTENSION AND LATECOMERS FEES WITH THE CITY OF TUWMATER, AND THE TERMS AND CONDITIONS THEREOF:
AMOUNT 7930001100: \$114,549.13
AMOUNT 7930001200: \$98,803.27
AMOUNT 7930001400: \$76,912.68
RECORDING DATE: NOVEMBER 18, 2011
RECORDING NO.: 4238613

(EXCEPTIONS PER CHICAGO TITLE COMMITMENT NUMBER 170016114 WITH EFFECTIVE DATE OF FEBRUARY 3, 2017)

LEGAL DESCRIPTION

LOTS 1 AND 2 OF SHORT SUBDIVISION NO. SS-1856, AS RECORDED JUNE 20, 1983 UNDER AUDITOR'S FILE NO. 8306200008; EXCEPT THAT PORTION OF SAID LOT 1 CONVEYED TO THURSTON COUNTY FOR RIGHT OF WAY BY DEED RECORDED FEBRUARY 8, 1994 UNDER AUDITOR'S FILE NO. 9402080333. IN THURSTON COUNTY, WASHINGTON
AND
LOTS 2 AND 3 OF LARGE LOT SUBDIVISION NO. LL-0605, AS RECORDED MAY 8, 1992 UNDER AUDITOR'S FILE NO. 9205080108. IN THURSTON COUNTY, WASHINGTON
AND
LOT 12 OF THOMPSON'S ADDITION TO BRIGHTON PARK, AS RECORDED IN VOLUME 7 OF PLATS, PAGE 29 1/2; TOGETHER WITH THE WESTERLY 30 FEET OF VACATED THOMPSON STREET ADJOINING ON THE EAST, WHICH UPON VACATED ATTACHED TO SAID PREMISES BY OPERATION OF LAW PURSUANT TO RESOLUTION NO. 5872 ADOPTED JUNE 6, 1978; EXCEPT ANY MOBILE OR MANUFACTURED HOME LOCATED THEREON.
IN THURSTON COUNTY, WASHINGTON

SURVEY NOTES

- INSTRUMENT USED: SOKKIA SRX 3 TOTAL STATION AND TOPCON GR5 GPS.
- THIS SURVEY MEETS OR EXCEEDS THE STANDARDS OF WAC 332-130-090
- SURVEY COMPLETED JULY 2017
- ALL MONUMENTS SHOWN AS FOUND VISITED JULY 2017.
- THERE ARE NO DESIGNATED PARKING SPACES ON THE SITE.
- CITY OF TUMWATER SEWER LIFT STATION EXIST ON TRACT 12.
- HOUSES ON ALL LOTS ARE VERY DILAPIDATED.
- WETLANDS FLAGGED BY OTHERS.

DATUM

HELD CENTER OF SECTION (TC POINT 6475) POSITION AS BASE POINT FOR THURSTON COUNTY DATUM. SCALED GPS OBSERVATIONS ABOUT THIS POINT FOR GROUND SCALE. CSF FOR PROJECT IS 0.999935457. PROJECT IS ON GROUND SCALE AND STATE PLANE GRID BEARINGS.

VERTICAL IS NGVD 29 BASED ON TIES TO THURSTON COUNTY MONUMENTS OLY-AIR ELEV 189.20 AND NGS-Q-531 ELEV 186.51

EASEMENTS NOT INCLUDED IN TITLE REPORT

21. SEWER LIFT STATION EASEMENT AND INGRESS AND EGRESS EASEMENT, AND TERMS AND CONDITIONS THEREOF:
GRANTED TO: CITY OF TUMWATER
PURPOSE: SEWER LIFT STATION
RECORDING DATE: JUNE 14, 2007
RECORDING NO.: 3935011 AND 3935010

CERTIFICATION

TO: SAPPHIRE RE PROPERTY HOLDINGS, LLC , CHICAGO TITLE
INSURANCE COMPANY OF WASHINGTON :
THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2016 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS, JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDES ITEMS 2, 4, 5, 7A, 8, 9, 11, 13 OF TABLE A THEREOF. THE FIELDWORK WAS COMPLETED ON JUNE, 2017.

DATE OF PLAT OR MAP: JULY 12, 2017

BLAIR PRIGGE, PLS 29278

SHEET INDEX

SV-0	NOTES, LEGAL DESCRIPTION, TITLE EXCEPTIONS AND DATUM
SV-1	OVERALL BOUNDARY AND EASEMENTS
SV-2	TOPOGRAPHY - SOUTHWEST
SV-3	TOPOGRAPHY - NORTHWEST
SV-4	TOPOGRAPHY - EAST SIDE

LEGEND (UTILITIES)

	CABLE MARKER POST		SEPTIC TANK
	CABLE RISER/ PEDESTAL		STORM CATCH BASIN
	CABLE VAULT/MANHOLE		STORM MANHOLE
	CULVERT		STORM CLEANOUT
	LUMINAIRE WITH ARM		STORM ROOF DRAIN
	LUMINAIRE		STORM YARD DRAIN
	LANDSCAPE/YARD LIGHT		STORM MARKER POST
	NATURAL GAS MARKER POST		TELEPHONE CABINET
	NATURAL GAS METER		TELEPHONE JUNCTION BOX
	PROPANE TANK		TELEPHONE RISER
	NATURAL GAS VALVE		TELEPHONE MARKER POST
	POWER CONDUIT		TELEPHONE POLE
	GUY ANCHOR		TELEPHONE VAULT/MANHOLE
	GUY POLE		WATER AIR RELEASE VALVE
	POWER JUNCTION BOX		WATER BLOW OFF
	POWER MARKER POST		FIRE DEPARTMENT CONNECTION
	POWER METER		HOSE BIB
	POWER POLE		IRRIGATION CONTROL VALVE
	PP WITH DROP LINE		WATER MARKER POST
	PP WITH DROP AND LIGHT		WATER METER
	PP WITH DROP, LIGHT AND TRANSFORMER		WATER POST INDICATOR VALVE
	PP WITH DROP AND TRANSFORMER		SPRINKLER HEAD
	PP WITH LIGHT AND TRANSFORMER		WATER VALVE
	PP WITH LIGHT		WATER FIRE HYDRANT
	PP WITH TRANSFORMER		WATER VAULT/MANHOLE
	POWER TRANSFORMER		WELL
	POWER VAULT/ MANHOLE		
	SIGNAL POLE ARM		

LEGEND (SURFACE FEATURES)

	DECIDUOUS TREE		ALUMINUM CAP
	CONIFER TREE		AERIAL PANEL
	MAPLE TREE		BRASS CAP
	DOUGLAS-FIR TREE		CONCRETE MONUMENT
	STUMP		HUB AND TACK
	SHRUB		IRON PIPE
	BIKE RACK		LEAD AND TACK
	MAIL BOX		MAG NAIL
	WHEEL STOP		MONUMENT IN CASE
	STREET SIGN (AS DESCRIBED)		PK NAIL
			REBAR AND CAP
			SCRIBE
			STONE

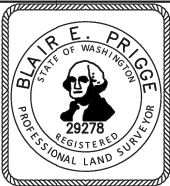
LINE TYPES

	WOOD FENCE		CHAIN LINK FENCE
	WIRE FENCE		GROUND TOE
	GROUND TOE		GROUND TOP
	GROUND BREAK		STORM LINE
	SANITARY SEWER LINE		BURIED TELEPHONE
	BURIED POWER		OVERHEAD TELEPHONE
	OVERHEAD POWER		WATER LINE
	IRRIGATION LINE		RECLAIMED WATER
	NATURAL GAS LINE		BURIED CABLE TV LINE
	BURIED FIBER OPTIC LINE		SANITARY FORCED MAIN
	WETLAND LINE		RACK LINE
	DITCH LINE		MAJOR CONTOUR
	MINOR CONTOUR		

HATCHING

	GRAVEL
	ASPHALT
	CONCRETE

DATE	7/12/2017
SCALE	1" = 80'
M2C PROJECT NO.:	17-591
DRAWN	BEP
CHECKED	BEP
APPROVED	BEP



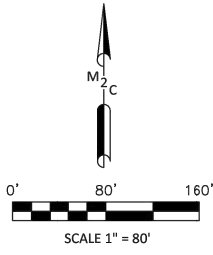
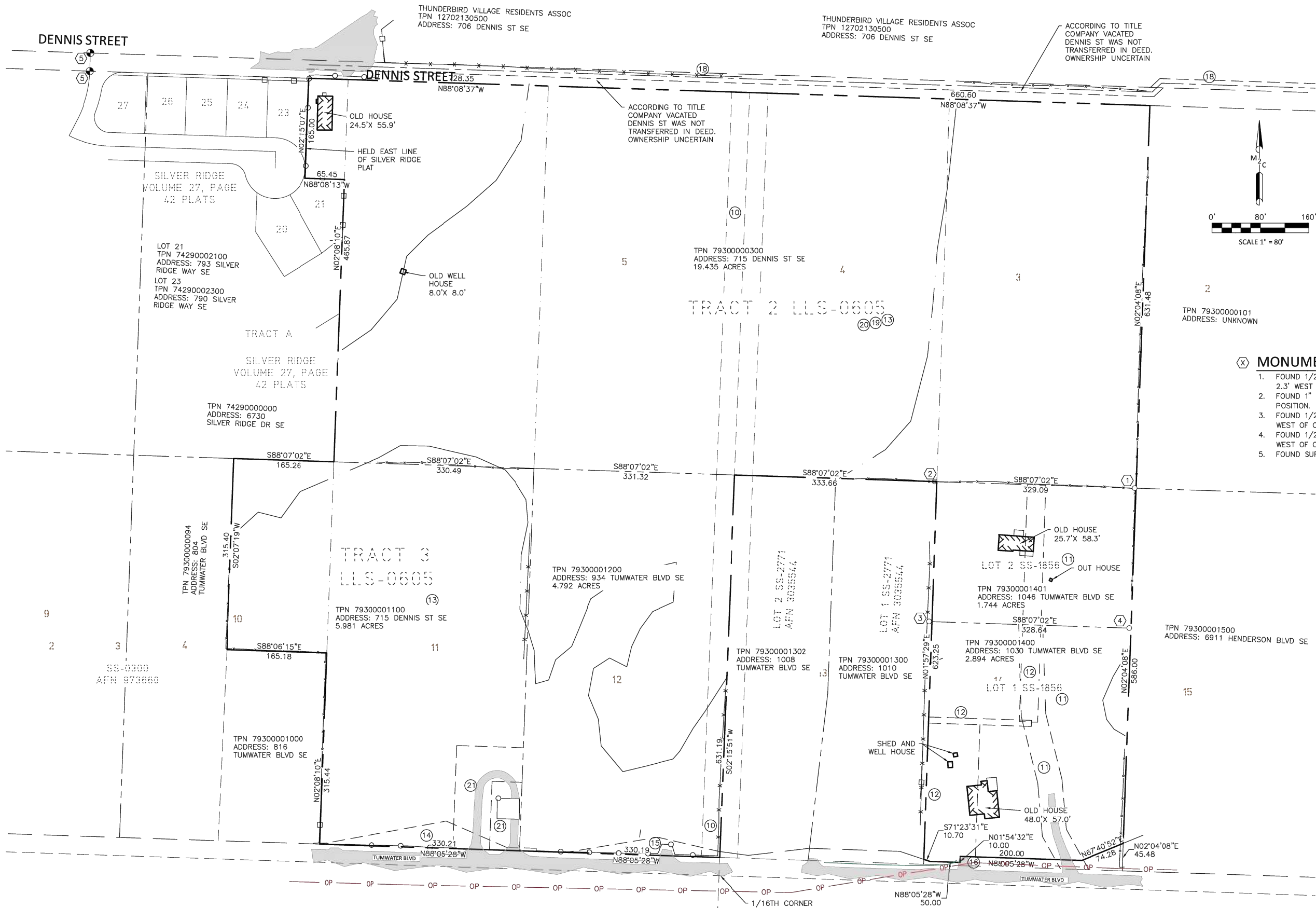
PROJECT NAME:
ALTA/NSPS LAND TITLE
SURVEY - TUMWATER BLVD

CLIENT NAME:
SCJ ALLIANCE

SHEET NAME:

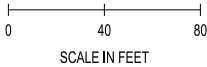
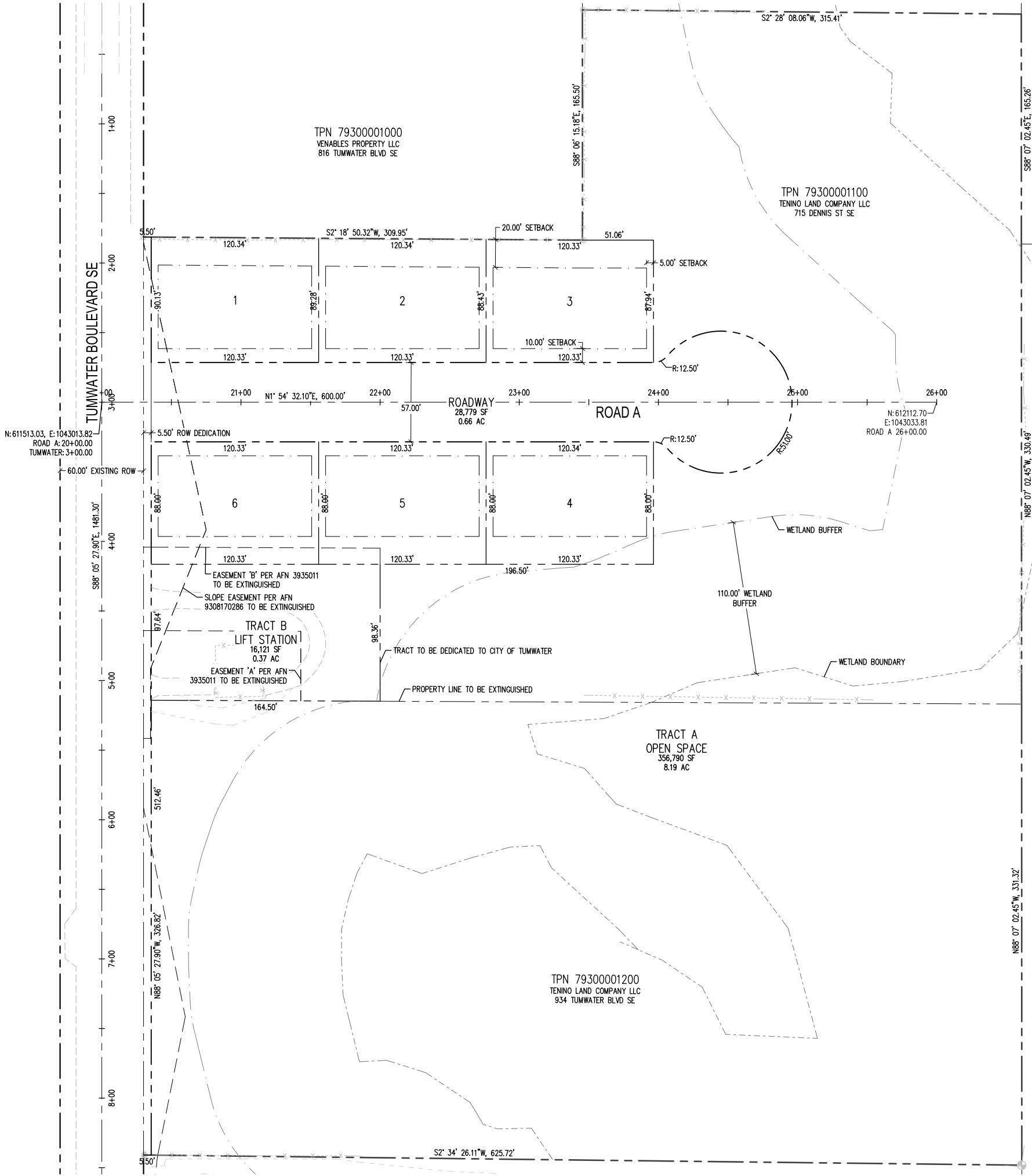
SV-1

SHEET NO. 1 OF 5



- (X) MONUMENT NOTES
1. FOUND 1/2" REBAR AND CAP, GLIDDEN 5329. 2.3' WEST OF CALC'D POSITION.
 2. FOUND 1" OD IRON PIPE, 3.5' WEST OF CALC'D POSITION.
 3. FOUND 1/2" REBAR AND CAP, LS 5154, 2.9' WEST OF CALC'D POSITION.
 4. FOUND 1/2" REBAR AND CAP, LS 5154, 4.8' WEST OF CALC'D POSITION.
 5. FOUND SURFACE BRASS CAP, PLAT MONUMENT

DATE 7/12/2017			PROJECT NAME: ALTA/NSPS LAND TITLE SURVEY - TUMWATER BLVD	SHEET NAME: SV-1
SCALE 1" = 80'				
M2C PROJECT NO.: 17-591			CLIENT NAME: SCJ ALLIANCE	SHEET NO. 2 OF 5
DRAWN BEP				
CHECKED BEP				
APPROVED BEP				



LEGEND

- PROPERTY LINE
- LOT LINE
- SETBACK LINE
- EASEMENT LINE
- EXISTING CHANNELIZATION
- EXISTING WETLAND BOUNDARY
- 110' WETLAND BUFFER

PARCEL AREA TABLE	
PARCEL #	AREA (SF)
1	10794
2	10692
3	10599
4	10589
5	10589
6	10589

REVISIONS

PROJECT NO.
100.006

DRAWN
S. JANIK

CHECKED
W. DUNLAP

SUBMITTAL DATES

OTB DATE
-

JSA CIVIL

Engineering | Planning | Management

111 TUMWATER BLVD SE, SUITE B203
TUMWATER, WA 98501

STAMP

WHITNEY E. DWYER

STATE OF WASHINGTON

REGISTERED PROFESSIONAL ENGINEER

5/16/2025

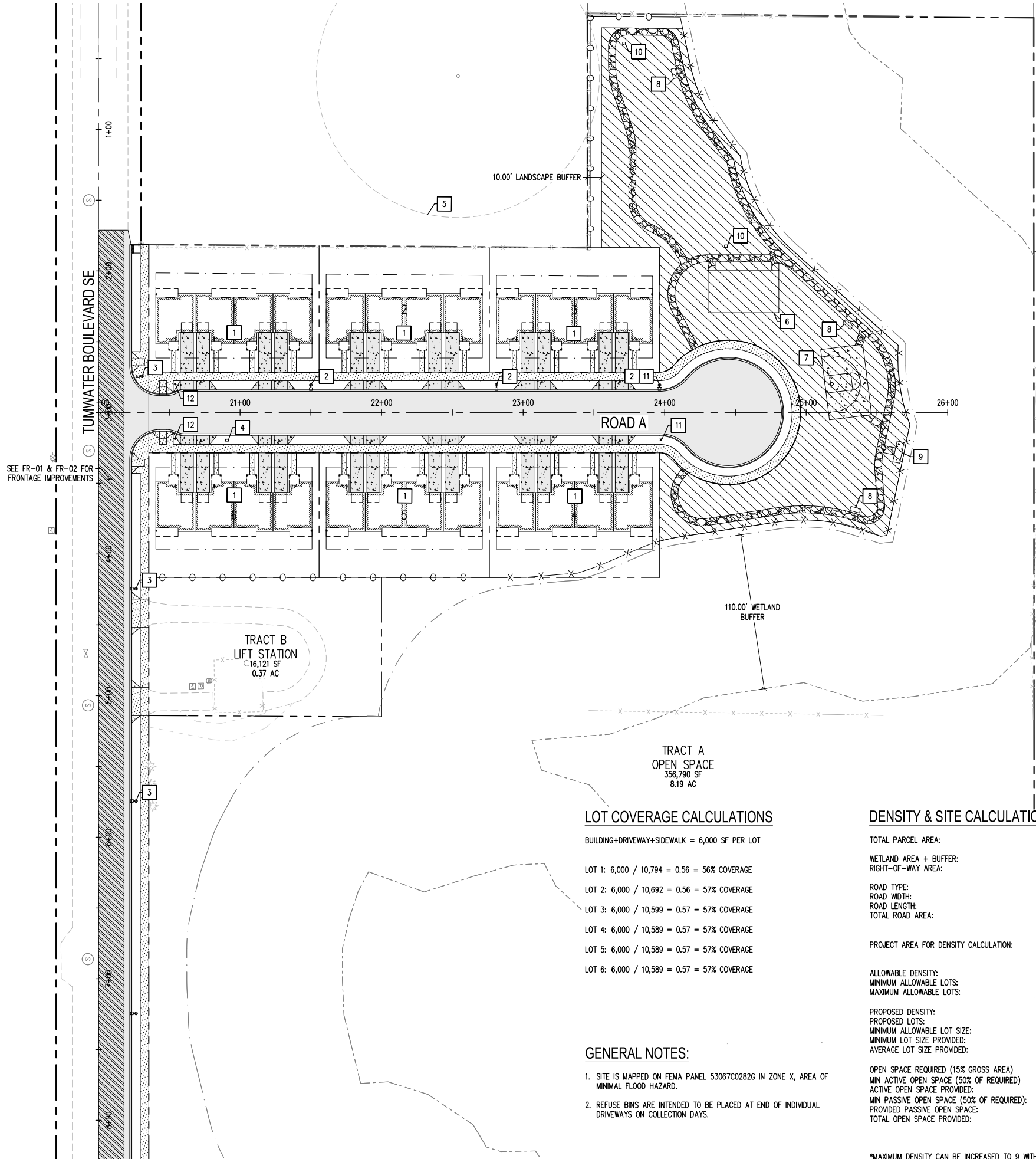
TUMWATER BOULEVARD
TOWNHOME CONDOMINIUMS
715 DENNIS ST SE
TUMWATER, 98501

TENINO LAND COMPANY
17348 MARCH ST SW
TENINO, WA 98589

SHEET TITLE
PRELIMINARY PLAT
MAP

SHEET
PL-01

May 15, 2025 12:00:52pm - User: WHITNEY DUNLAP
N:\PROJECTS\100 TODD HANSEN\100.006 TUMWATER BLVD - MULTIFAMILY\CAD\100.006 SP-01.DWG



0 40 80
SCALE IN FEET

LEGEND

- PROPERTY LINE
- LOT LINE
- SETBACK LINE
- EASEMENT LINE
- EXISTING CHANNELIZATION
- EXISTING WETLAND BOUNDARY
- 110' WETLAND BUFFER
- 42" CEDAR SPLIT RAIL WETLAND FENCING
PLACE WETLAND BUFFER SIGN EVERY 50'
- 72" CEDAR FENCING
- PROPOSED STREET LIGHT
- PROPOSED BUILDING
- CEMENT CONCRETE CURB & GUTTER
- CEMENT CONCRETE SIDEWALK
- CEMENT CONCRETE DRIVEWAYS
- ASPHALT PAVEMENT
- GRIND & OVERLAY
- CEMENT CONCRETE AS NOTED
- DECOMPOSED GRANITE PATHWAY
- ACTIVE OPEN SPACE
SEE LANDSCAPE PLANS FOR USE OF AREA

CONSTRUCTION NOTES

- PROPOSED 4 UNIT, 2-STORY TOWNHOME BUILDING
- INTERNAL STREET LIGHTING
LIGHTS SHALL BE AT A MOUNTING HEIGHT OF 25' WITH AN ARM LENGTH OF 6'. MAXIMUM SPACING 120 FEET ON CENTER
- TUMWATER BLVD STREET LIGHTING
LIGHTS SHALL BE AT A MOUNTING HEIGHT OF 35' WITH AN ARM LENGTH OF 8'. MAXIMUM SPACING 150 FEET ON CENTER
- MAILBOX CLUSTER
- 100' WELLHEAD PROTECTION RADIUS
- PLAYGROUND, CONCRETE PERIMETER WITH WOOD CHIP BASE
- HALF COURT BASKETBALL
- BENCH
- WETLAND VIEWING PLATFORM WITH INFORMATIONAL SIGNAGE
- DISC GOLF BASKET TARGET
- "NO PARKING IN CUL-DE-SAC" SIGN
- "NO PARKING HERE TO CORNER" SIGN

PROJECT INFORMATION

APPLICANT	TENINO LAND COMPANY, TODD HANSEN
ENGINEER	JSA CIVIL, WHITNEY DUNLAP
PARCEL NUMBER	793300001100 & 793300001200
PROPOSED USE	SINGLE FAMILY RESIDENTIAL - TOWNHOME CONDOS
SIZE OF EACH UNIT	± 1,452 SF
FLOOR AREA RATIO	RANGE FROM 0.50 TO 0.60
BUILDING HEIGHT	± 30' (35' MAX ALLOWABLE)
NUMBER OF PARKING SPACES	1 GARAGE SPACE + 1 DRIVEWAY SPACE PER LOT = 48 PARKING SPACES FOR DEVELOPMENT
IMPERVIOUS SURFACE PER LOT	SEE CALCULATIONS THIS SHEET, MAX 70% ALLOWABLE
ZONING	SINGLE FAMILY MEDIUM DENSITY (SFM & SFM2) WITH AIRPORT OVERLAY
WATER	CITY OF TUMWATER
SEWER	CITY OF TUMWATER
SETBACKS	FRONT 10' SIDE 5' (0' FOR CONNECTED UNITS) REAR 20'

LOT COVERAGE CALCULATIONS

BUILDING+DRIVEWAY+SIDEWALK = 6,000 SF PER LOT

- LOT 1: 6,000 / 10,794 = 0.56 = 56% COVERAGE
LOT 2: 6,000 / 10,692 = 0.56 = 57% COVERAGE
LOT 3: 6,000 / 10,599 = 0.57 = 57% COVERAGE
LOT 4: 6,000 / 10,589 = 0.57 = 57% COVERAGE
LOT 5: 6,000 / 10,589 = 0.57 = 57% COVERAGE
LOT 6: 6,000 / 10,589 = 0.57 = 57% COVERAGE

GENERAL NOTES:

- SITE IS MAPPED ON FEMA PANEL 53067C0282G IN ZONE X, AREA OF MINIMAL FLOOD HAZARD.
- REFUSE BINS ARE INTENDED TO BE PLACED AT END OF INDIVIDUAL DRIVEWAYS ON COLLECTION DAYS.

DENSITY & SITE CALCULATIONS

TOTAL PARCEL AREA:	469,168 SF	10.77 AC
WETLAND AREA + BUFFER:	287,616 SF	6.60 AC
RIGHT-OF-WAY AREA:	32,405 SF	0.74 AC
ROAD TYPE:	PUBLIC - LOCAL RESIDENTIAL	
ROAD WIDTH:	32 FT	
ROAD LENGTH:	450 FT	
TOTAL ROAD AREA:	14,400 SF	
PROJECT AREA FOR DENSITY CALCULATION:	[SITE AREA] - [CRITICAL AREA] - [ROW] 10.77 - 6.60 - 0.74 = 3.43 AC	
ALLOWABLE DENSITY:	6-8 UNITS PER AC*	
MINIMUM ALLOWABLE LOTS:	6 UNITS PER AC X 3.43 AC = 21 LOTS	
MAXIMUM ALLOWABLE LOTS:	8 UNITS PER AC X 3.43 AC = 27 LOTS	
PROPOSED DENSITY:	24 UNITS / 3.43 AC = 7 LOTS PER AC	
PROPOSED LOTS:	24 CONDOMINIUM TOWNHOMES	
MINIMUM ALLOWABLE LOT SIZE:	2,400 SF	
MINIMUM LOT SIZE PROVIDED:	10,589 SF	
AVERAGE LOT SIZE PROVIDED:	10,642 SF	
OPEN SPACE REQUIRED (15% GROSS AREA)	10.77 AC X 0.15 = 1.62 AC	
MIN ACTIVE OPEN SPACE (50% OF REQUIRED)	1.62 AC X 0.50 = 0.81 AC	
ACTIVE OPEN SPACE PROVIDED:	36,380 SF	0.84 AC
MIN PASSIVE OPEN SPACE (50% OF REQUIRED):	1.62 AC X 0.50 = 0.81 AC	
PROVIDED PASSIVE OPEN SPACE:	334,100 SF	7.67 AC
TOTAL OPEN SPACE PROVIDED:	370,480 SF	8.51 AC

*MAXIMUM DENSITY CAN BE INCREASED TO 9 WITH USE OF DEVELOPMENT CREDITS

REVISIONS

PROJECT NO.
100.006
DRAWN
S. JANIK
CHECKED
W. DUNLAP
SUBMITTAL DATES

OTB DATE
-

JSA CIVIL
Engineering | Planning | Management
111 TUMWATER BLVD SE, SUITE B203
TUMWATER, WA 98501



TUMWATER BOULEVARD
TOWNHOME CONDOMINIUMS
715 DENNIS ST SE
TUMWATER, 98501

TENINO LAND COMPANY
17348 MARCH ST SW
TENINO, WA 98589

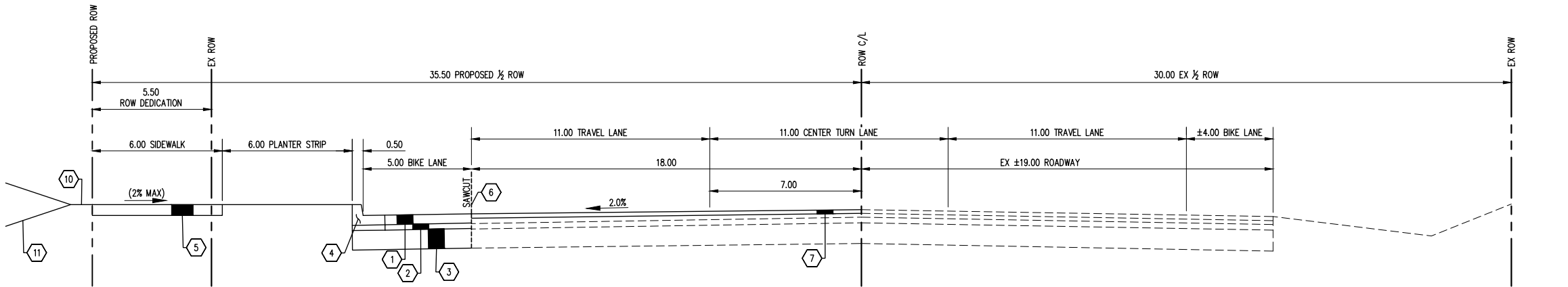
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PRELIMINARY SITE PLAN

SHEET
SP-01

May 15, 2025 10:01:49am - User: Whitney D. J. Hansen
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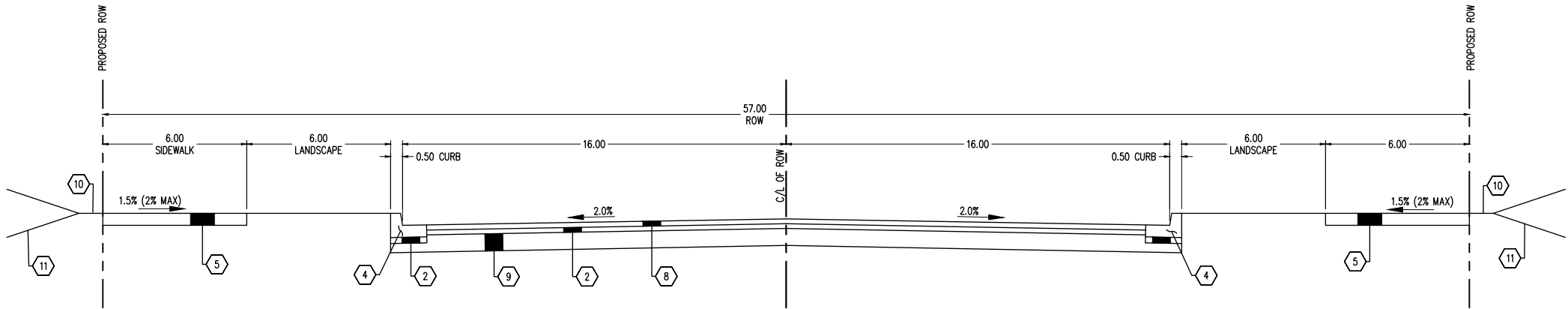
CALL BEFORE YOU DIG

THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE LOCATION AND PROTECTION OF ALL EXISTING UTILITIES. THE CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS PRIOR TO CONSTRUCTION BY CALLING THE UNDERGROUND LOCATE LINE AT 811 A MINIMUM OF 48 HOURS PRIOR TO ANY EXCAVATION.



TUMWATER BLVD WIDENING (ARTERIAL)

NTS



ROAD A (LOCAL ACCESS)

NTS

CONSTRUCTION NOTES

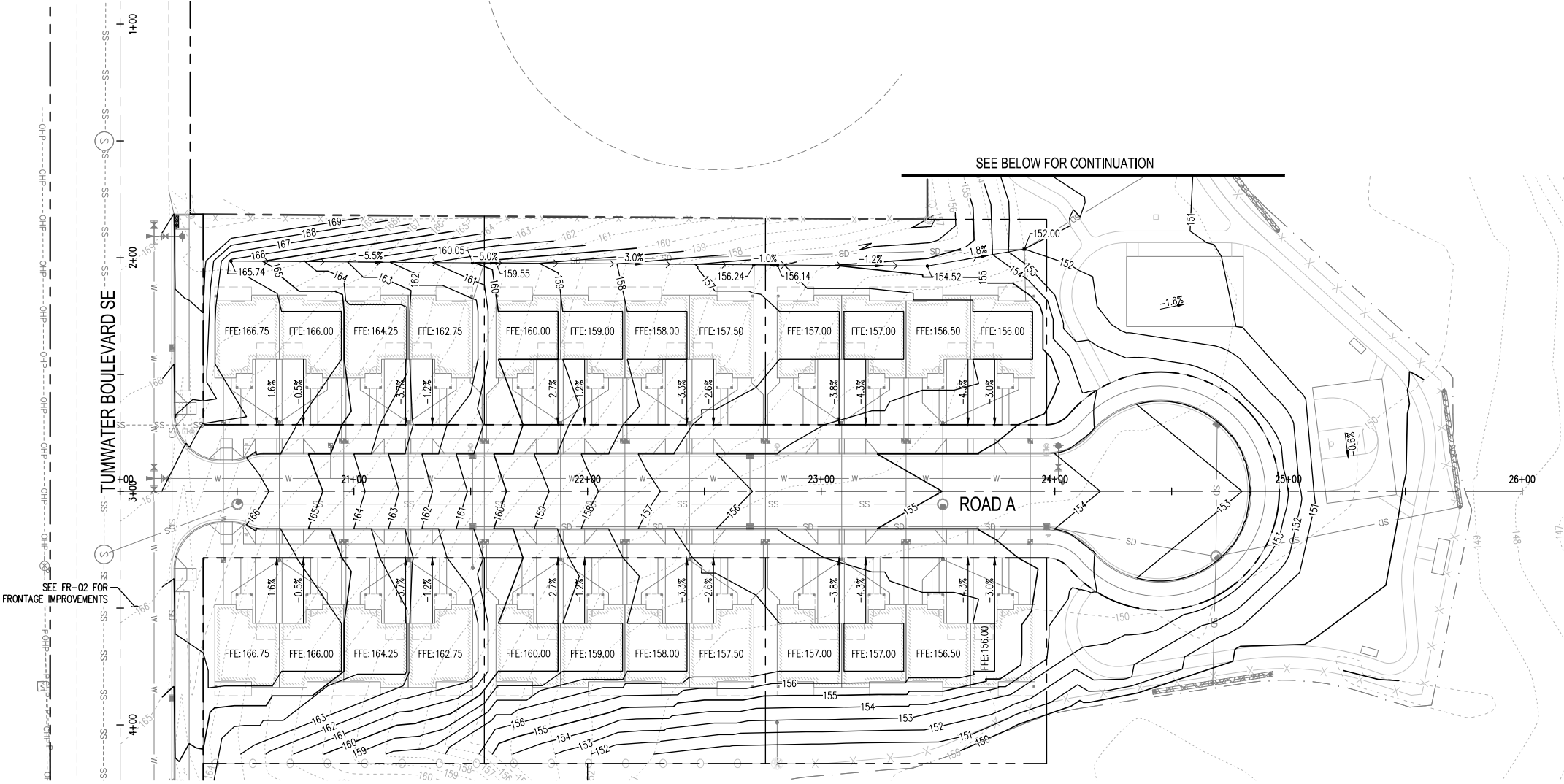
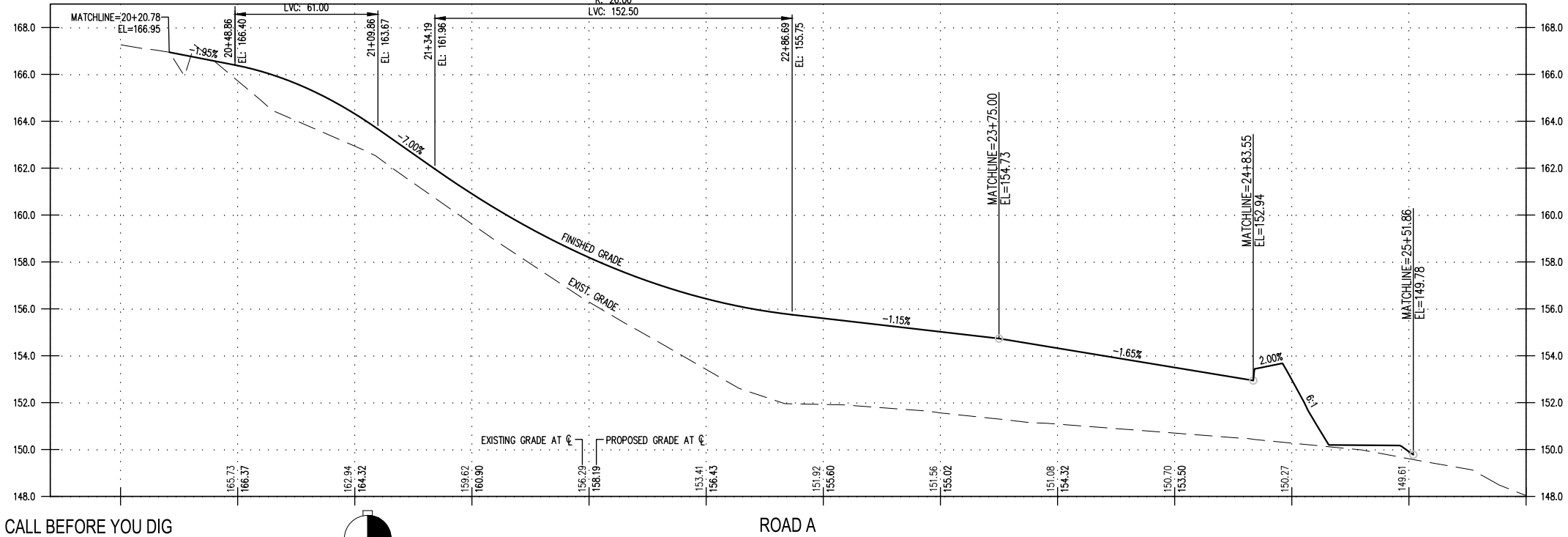
- 0.50' COMPACTED DEPTH HMA
- 0.20' COMPACTED DEPTH CSTC
- 1.50' COMPACTED DEPTH CSBC
- CEMENT CONCRETE CURB & GUTTER
- CEMENT CONCRETE SIDEWALK
- SAWCUT A CLEAN VERTICAL EDGE
- 0.17" GRIND AND OVERLAY EXISTING ASPHALT AS SHOWN ON PLAN
- 0.30' COMPACTED DEPTH HMA
- 0.80' COMPACTED CSBC
- 1.0' BENCH BEHIND SIDEWALK
- MAXIMUM 3(H) TO 1(V) CATCH SLOPE

REVISIONS	
PROJECT NO. 100.006	
DRAWN S. JANIK	
CHECKED W. DUNLAP	
SUBMITTAL DATES	
OTB DATE -	
JSA CIVIL Engineering Planning Management 111 TUMWATER BLVD SE, SUITE B203 TUMWATER, WA 98501	
STAMP WHITNEY E. DUNLAP STATE OF WASHINGTON REGISTERED PROFESSIONAL ENGINEER 5/16/2025	
TUMWATER BOULEVARD TOWNHOME CONDOMINIUMS 715 DENNIS ST SE TUMWATER, 98501	
TENINO LAND COMPANY 17348 MARCH ST SW TENINO, WA 98589	
SHEET TITLE PRELIMINARY ROAD SECTIONS	
SHEET XS-01	

May 15, 2025 12:02:27pm User: Whitney E. Dunlap
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CALL BEFORE YOU DIG

THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE LOCATION AND PROTECTION OF ALL EXISTING UTILITIES. THE CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS PRIOR TO CONSTRUCTION BY CALLING THE UNDERGROUND LOCATE LINE AT 811 A MINIMUM OF 48 HOURS PRIOR TO ANY EXCAVATION.



N

0 30 60
SCALE IN FEET

LEGEND

- PROPERTY LINE
- EXISTING CONTOURS
- PROPOSED CONTOURS
- GRADE BREAK
- EXISTING CHANNELIZATION
- EXISTING STORM LINE
- PROPOSED BUILDING
- CEMENT CONCRETE CURB & GUTTER
- STORM LINE
- CATCH BASIN
- SLOPE ARROW
- SPOT ELEVATION

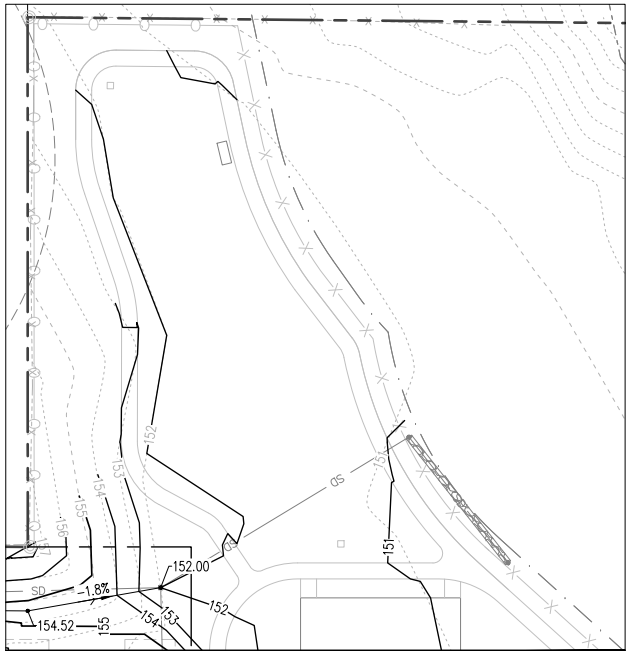
GENERAL NOTES

- SPOT ELEVATIONS REPRESENT FINISHED GRADE AT FLOW LINE UNLESS OTHERWISE NOTED
- CATCH SLOPES TO EXISTING GRADE SHALL NOT EXCEED 3:1
- CONTRACTOR SHALL NOT ALLOW WATER TO POND AT SUBGRADE OR BASE MATERIAL ADJACENT TO CURB INLETS AND CATCH BASINS PRIOR TO PLACEMENT OF PAVEMENT. TEMPORARY PROVISIONS SUCH AS DEWATERING AND INSTALLATION OF SUBDRAINS SHALL BE TAKEN TO KEEP THE SUBGRADE DRY DURING CONSTRUCTION.
- ACRONYMS FOR SPOT ELEVATIONS:
 - BW: BOTTOM OF WALL
 - HP: HIGH POINT
 - LP: LOW POINT
 - MATCH EX: MATCH EXISTING GRADE
 - TBC: TOP BACK OF CURB
 - TW: TOP OF WALL
 - SW: SIDEWALK

GRADING QUANTITIES

CUT: 1,000 CY
FILL: 10,000 CY

NOTE: QUANTITIES ARE APPROXIMATE FOR PERMITTING PURPOSES ONLY



REVISIONS

PROJECT NO.
100.006
DRAWN
S. JANIK
CHECKED
W. DUNLAP
SUBMITTAL DATES

OTB DATE
-

JSA CIVIL
Engineering | Planning | Management
111 TUMWATER BLVD SE, SUITE B203
TUMWATER, WA 98501



5/16/2025

TUMWATER BOULEVARD
TOWNHOME CONDOMINIUMS
715 DENNIS ST SE
TUMWATER, 98501

TENINO LAND COMPANY
17348 MARCH ST SW
TENINO, WA 98589

SHEET TITLE

PRELIMINARY
GRADING PLAN

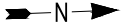
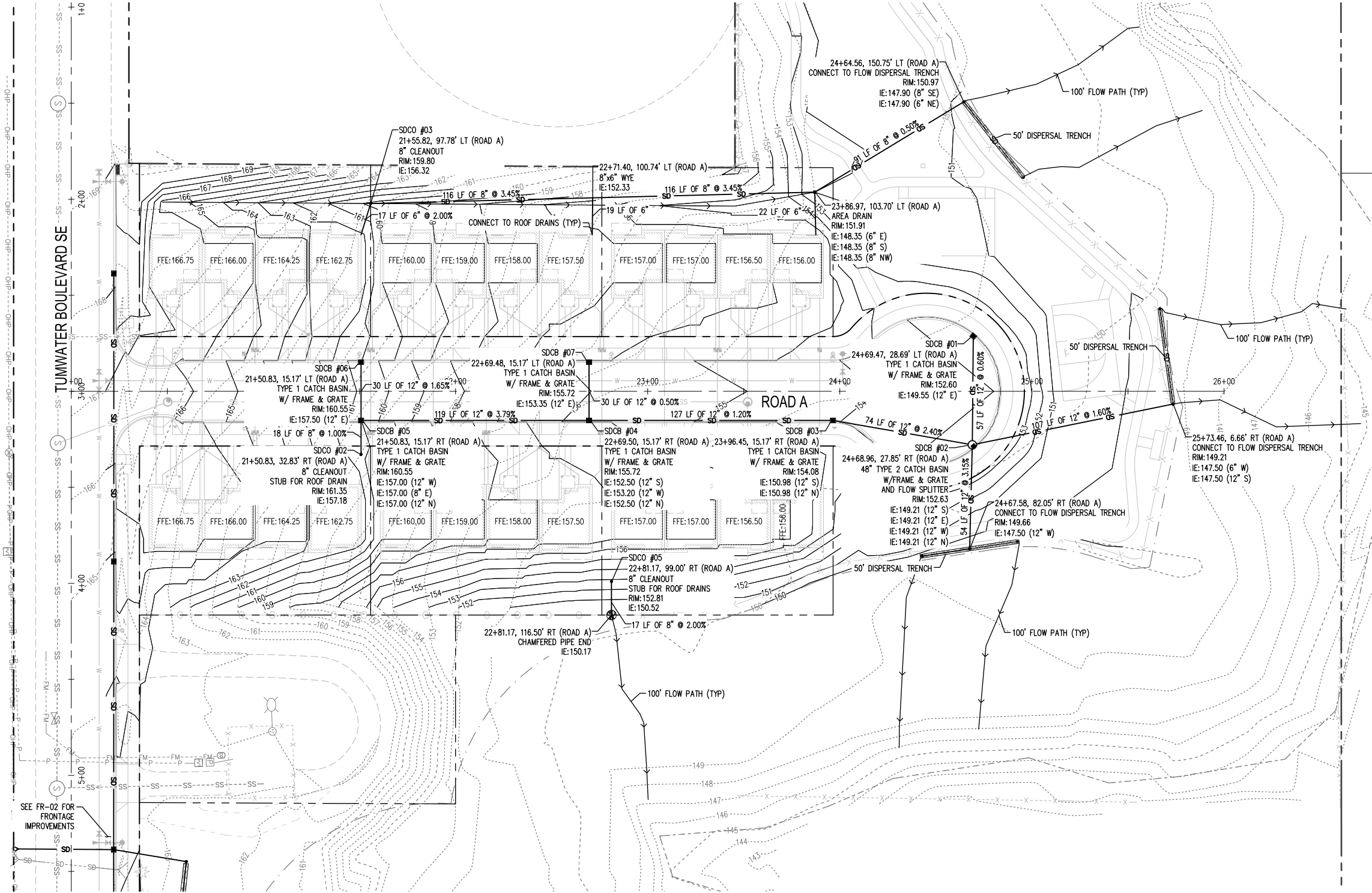
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CG-01

May 15, 2025 12:02:45pm User: Whitney E. Dwyer
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CALL BEFORE YOU DIG

THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE LOCATION AND PROTECTION OF ALL EXISTING UTILITIES. THE CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS PRIOR TO CONSTRUCTION BY CALLING THE UNDERGROUND LOCATE LINE AT 811 A MINIMUM OF 48 HOURS PRIOR TO ANY EXCAVATION.



0 30 60
SCALE IN FEET

LEGEND

- PROPERTY LINE
- EXISTING CONTOURS
- PROPOSED CONTOURS
- EXISTING CHANNELIZATION
- EXISTING STORM LINE
- PROPOSED BUILDING
- CEMENT CONCRETE CURB & GUTTER
- WATER LINE
- WATER SERVICE LINE
- SEWER LINE
- ADS N-12 STORM LINE UNLESS OTHERWISE NOTED
- CATCH BASIN
- STORM CLEANOUT
- AREA DRAIN
- RIP RAP
- FLOW DISPERSAL TRENCH

REVISIONS

PROJECT NO.
100.006
DRAWN
S. JANIK
CHECKED
W. DUNLAP
SUBMITTAL DATES

OTB DATE

JSA CIVIL
Engineering | Planning | Management
111 TUMWATER BLVD SE, SUITE B203
TUMWATER, WA 98501



TUMWATER BOULEVARD
TOWNHOME CONDOMINIUMS
715 DENNIS ST SE
TUMWATER, 98501

TENINO LAND COMPANY
17348 MARCH ST SW
TENINO, WA 98589

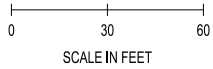
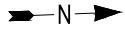
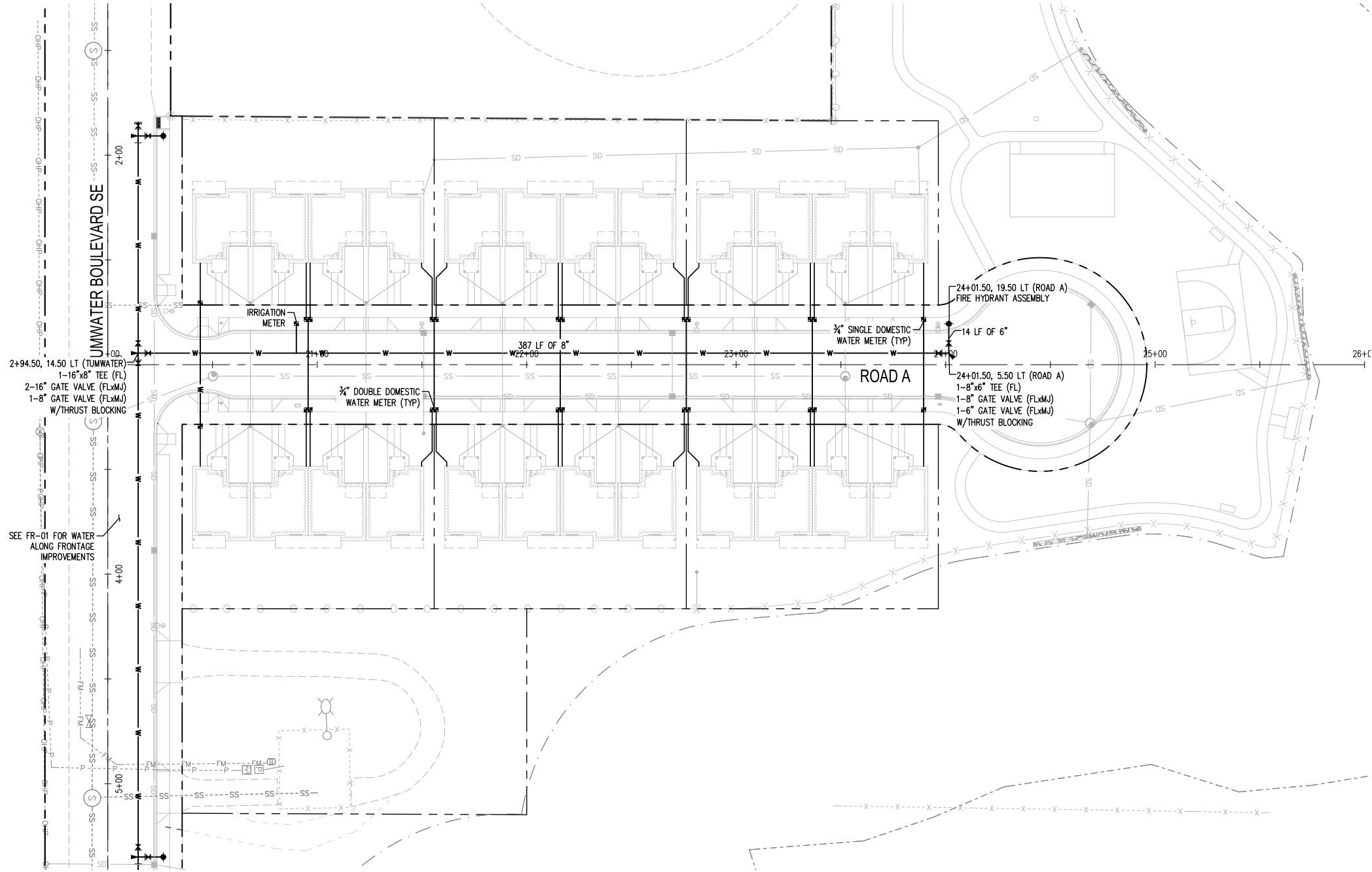
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PRELIMINARY
STORMWATER PLAN

SHEET
SD-01

May 15, 2025 12:03:24pm User: WHITNEY E. DUNLAP
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CALL BEFORE YOU DIG

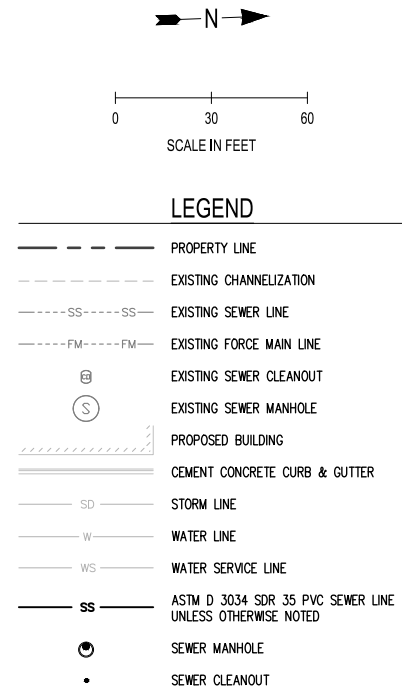
THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE LOCATION AND PROTECTION OF ALL EXISTING UTILITIES. THE CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS PRIOR TO CONSTRUCTION BY CALLING THE UNDERGROUND LOCATE LINE AT 811 A MINIMUM OF 48 HOURS PRIOR TO ANY EXCAVATION.





LEGEND

- PROPERTY LINE
- EXISTING CHANNELIZATION
- EXISTING WATER LINE
- EXISTING WATER METER
- PROPOSED BUILDING
- CEMENT CONCRETE CURB & GUTTER
- STORM LINE
- SEWER LINE
- ANSI/AWWA PVC C900 DR 18 WATER LINE UNLESS OTHERWISE NOTED
- HDPE WATER SERVICE LINE UNLESS OTHERWISE NOTED
- WATER FITTINGS W/ THRUST BLOCKING
- WATER METER
- FIRE HYDRANT

REVISIONS	
PROJECT NO. 100.006	
DRAWN S. JANIK	
CHECKED W. DUNLAP	
SUBMITTAL DATES	
OTB DATE	
JSA CIVIL Engineering Planning Management 111 TUMWATER BLVD SE, SUITE B203 TUMWATER, WA 98501	
 5/16/2025	
TUMWATER BOULEVARD TOWNHOME CONDOMINIUMS 715 DENNIS ST SE TUMWATER, 98501	TENINO LAND COMPANY 17348 MARCH ST SW TENINO, WA 98589
SHEET TITLE PRELIMINARY WATER PLAN	
SHEET WT-01	



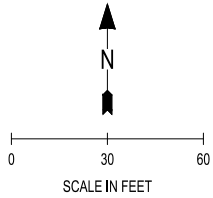
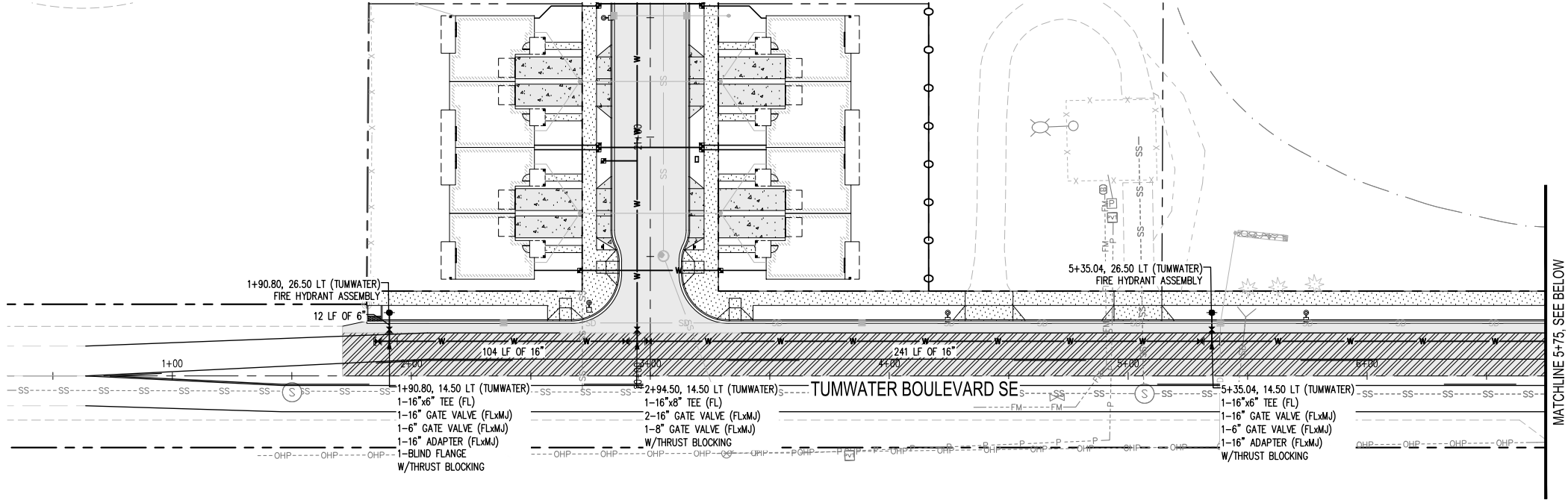
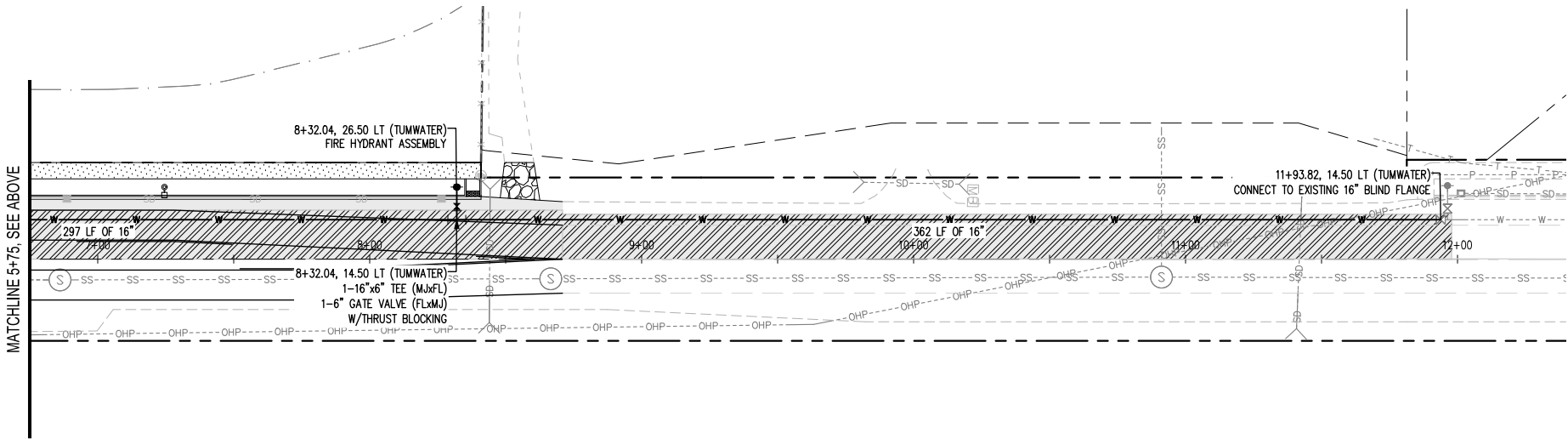
VERTICAL DATUM
NGVD 29

REVISIONS	
PROJECT NO. 100.006	
DRAWN S. JANIK	
CHECKED W. DUNLAP	
SUBMITTAL DATES	
OTB DATE --	
<div style="text-align: center;">  <p>JSA CIVIL Engineering Planning Management</p> <p>111 TUMWATER BLVD SE, SUITE B203 TUMWATER, WA 98501</p> </div>	
STAMP	
 5/16/2025	
TENINO LAND COMPANY 17343 MARCH ST SW TENINO, WA 98589	TUMWATER BOULEVARD TOWNHOME CONDOMINIUMS 715 DENNIS ST SE TUMWATER, 98501
SHEET TITLE	
PRELIMINARY SEWER PLAN	
SHEET	
SS-01	

May 15, 2025 12:04:49pm User: Whitney.Dwyer
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CALL BEFORE YOU DIG

THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE LOCATION AND PROTECTION OF ALL EXISTING UTILITIES. THE CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS PRIOR TO CONSTRUCTION BY CALLING THE UNDERGROUND LOCATE LINE AT 811 A MINIMUM OF 48 HOURS PRIOR TO ANY EXCAVATION.



LEGEND

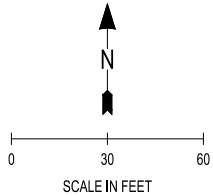
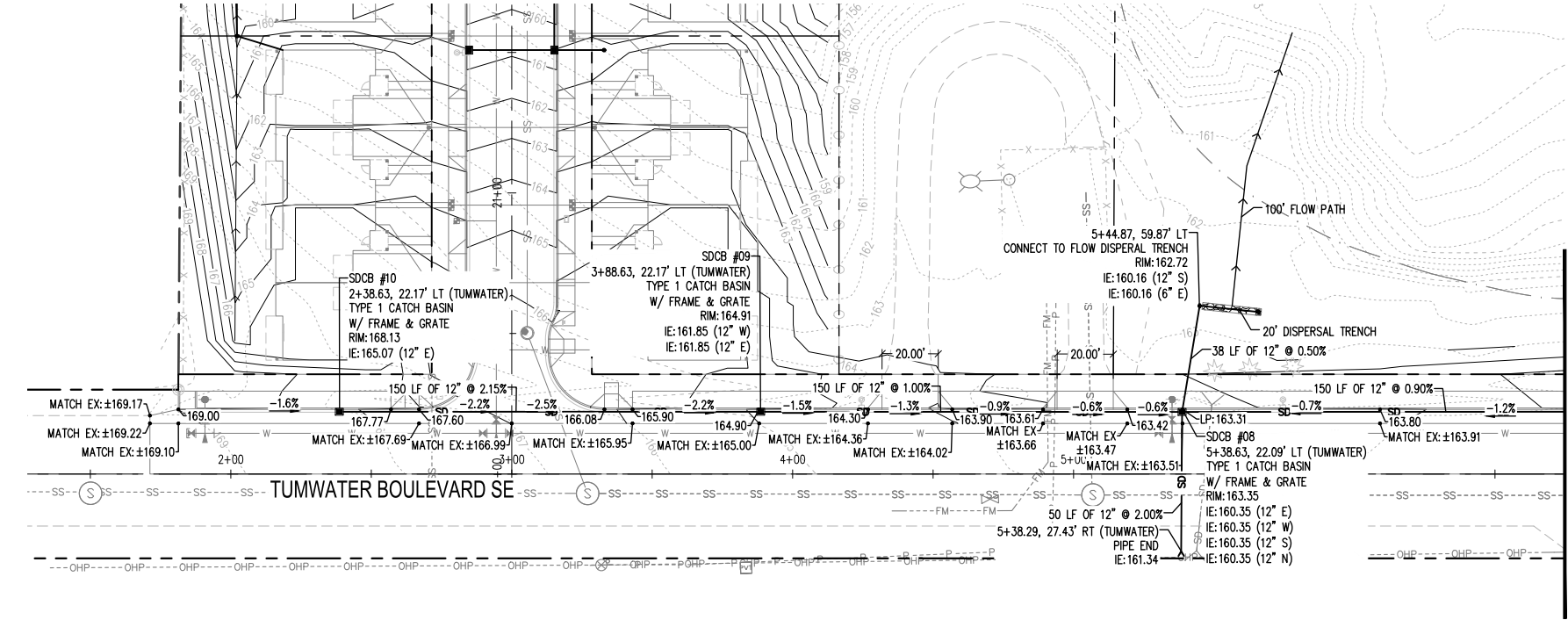
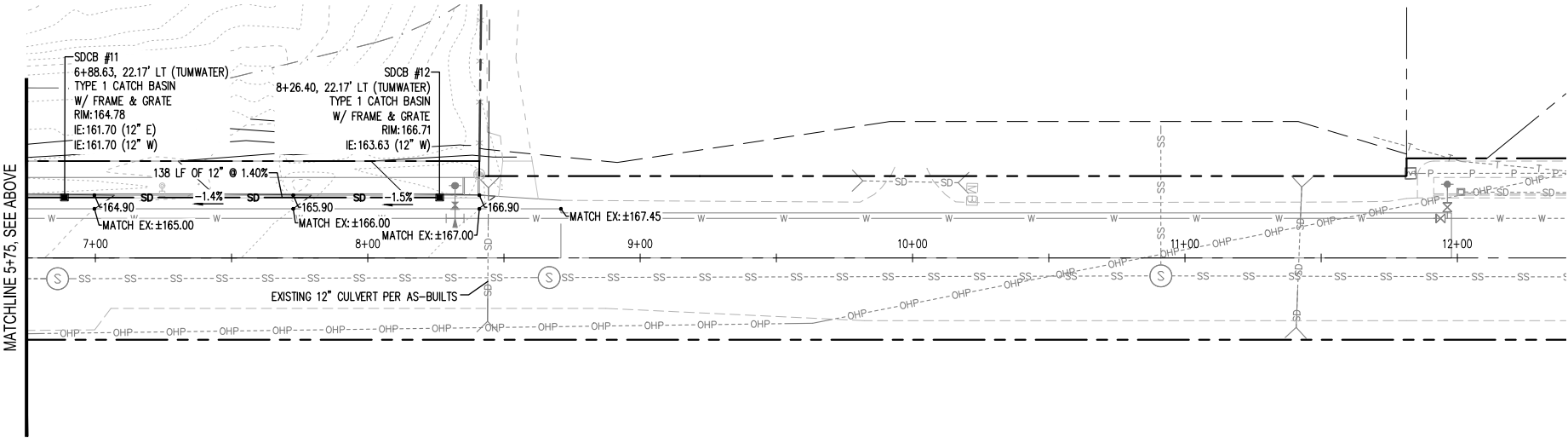
- PROPERTY LINE
- LOT LINE
- EASEMENT LINE
- EXISTING CHANNELIZATION
- EXISTING WETLAND BOUNDARY
- 110' WETLAND BUFFER
- PROPOSED BUILDING
- CEMENT CONCRETE CURB & GUTTER
- CEMENT CONCRETE SIDEWALK
- CEMENT CONCRETE DRIVEWAYS
- ASPHALT PAVEMENT
- GRIND & OVERLAY
- SD STORM LINE
- SS SEWER LINE
- W ANSI/AWWA PVC C900 DR 18 WATER LINE UNLESS OTHERWISE NOTED
- WS HDPE WATER SERVICE LINE UNLESS OTHERWISE NOTED
- Water fittings w/thrust blocking
- Water meter
- Fire hydrant

REVISIONS	
PROJECT NO. 100.006	
DRAWN S. JANIK	
CHECKED W. DUNLAP	
SUBMITTAL DATES	
OTB DATE	
JSA CIVIL Engineering Planning Management 111 TUMWATER BLVD SE, SUITE B203 TUMWATER, WA 98501	
 5/16/2025	
TUMWATER BOULEVARD TOWNHOME CONDOMINIUMS 715 DENNIS ST SE TUMWATER, 98501	
TENINO LAND COMPANY 17348 MARCH ST SW TENINO, WA 98589	
SHEET TITLE PRELIMINARY FRONTAGE IMPROVEMENTS	
SHEET FR-01	

May 15, 2025 12:05:35pm - User: Whitney E. Dwyer
N:\V - PROJECTS\100 TODD HANSEN\100.006 TUMWATER BLVD - MULTIFAMILY\ACAD\100.006 FR-02.DWG

CALL BEFORE YOU DIG

THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE LOCATION AND PROTECTION OF ALL EXISTING UTILITIES. THE CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS PRIOR TO CONSTRUCTION BY CALLING THE UNDERGROUND LOCATE LINE AT 811 A MINIMUM OF 48 HOURS PRIOR TO ANY EXCAVATION.



LEGEND

- PROPERTY LINE
- LOT LINE
- EASEMENT LINE
- EXISTING CHANNELIZATION
- EXISTING WETLAND BOUNDARY
- 110' WETLAND BUFFER
- PROPOSED BUILDING
- CEMENT CONCRETE CURB & GUTTER
- SEWER LINE
- WATER LINE
- ADS N-12 STORM LINE UNLESS OTHERWISE NOTED
- CATCH BASIN
- RIP RAP PAD

REVISIONS	
PROJECT NO. 100.006	
DRAWN S. JANIK	
CHECKED W. DUNLAP	
SUBMITTAL DATES	
OTB DATE	
JSA CIVIL Engineering Planning Management 111 TUMWATER BLVD SE, SUITE B203 TUMWATER, WA 98501	
 5/16/2025	
TUMWATER BOULEVARD TOWNHOME CONDOMINIUMS 715 DENNIS ST SE TUMWATER, 98501	
TENINO LAND COMPANY 17348 MARCH ST SW TENINO, WA 98589	
SHEET TITLE PRELIMINARY FRONTAGE GRADING & STORM	
SHEET FR-02	