Pacific Northwest
NATIONAL LABORATORY

PNNL-38536

Wetlands Delineation Report and Classification

PNNL – Sequim (formerly MSL) Wetland Delineation for the Water and Sewer Line

September 2025

Dana B. Vesty, PWS
Ioana Bociu, MS

U.S. DEPARTMENT OF ENERGY

Prepared for the U.S. Department of Energy
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Pacific Northwest National Laboratory
Richland, Washington 99354

Acronyms and Abbreviations

Ac	Acres
CAO	County Critical Areas Ordinances
CFS	Cubic Feet per Second
CWA	Clean Water Act
DBH	Diameter at Breast Height
DOE	Department of Energy
Ecology	Washington Department of Ecology
Ft	Feet
FEMA	Federal Emergency Management Agency
FIRM	Federal Insurance Rate Map
GPS	Global Positioning System
GMA	Growth Management Act
HGM	Hydrogeomorphic
LULC	Land use/Land cover
MSL	Marine Sciences Laboratory
NRCS	Natural Resources Conservation Service
NWPL	National Wetland Plant List
NWI	National Wetlands Inventory
OHWM	Ordinary High Water Mark
PFO	Palustrine Forested Wetland
PNNL	Pacific Northwest National Laboratory
PNSO	Pacific Northwest Site Office
PUB	Palustrine Unconsolidated Bottom
PWS	Professional Wetland Scientist
SMA	Shoreline Management Act
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
WAC	Washington Administrative Code
US EPA	United States Environmental Protection Agency
WETS	Wetlands Climate Tables
WOTUS	Waters of the United States

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1.0 Introduction

1.1 Purpose

The Pacific Northwest National Laboratory (PNNL) – Sequim, historically known as the Marine Sciences Laboratory (MSL) in Sequim, Washington, is managed and operated by Battelle on behalf of the U.S. Department of Energy (DOE) Pacific Northwest Site Office (PNSO). The site provides capabilities for future energy research, ocean chemistry, currents and wave analyses, wetland and coastal ecosystem restoration, other environmental research involving marine resources, and hosts the only marine research facilities in the Department of Energy National Laboratory Complex. In order to support campus development, maintenance, and potential research activities, a wetland delineation was conducted on the southern portion of campus in accordance with state and federal wetland regulations.

PNNL - Sequim is planning to connect to the City of Sequim water and sewer lines by connecting east from West Sequim Bay Road and running along Junco Road, within Battelle owned parcel boundaries, to the southwest corner of the Sequim Campus. From there the installation will parallel the PNNL-Sequim Campus driveway and route toward the west and south sides of MSL-5 to connect to existing utilities. This project will cross the Battelle land on parcels 0330223101700000, 0330224302500000, 0330223400000000, and 0330224300000000, and DOE/PNSO land on parcel 0330224200000000. This project will supply the campus with water for drinking water and fire water systems, and sewer to replace the current septic system. Timing of line installation will be driven by the City of Sequim tie-in construction along West Sequim Bay Road.

The project area is located at 1529 W Sequim Bay Road in Sequim, Washington. Sequim Bay is located to the east, outside of the project and delineation area.

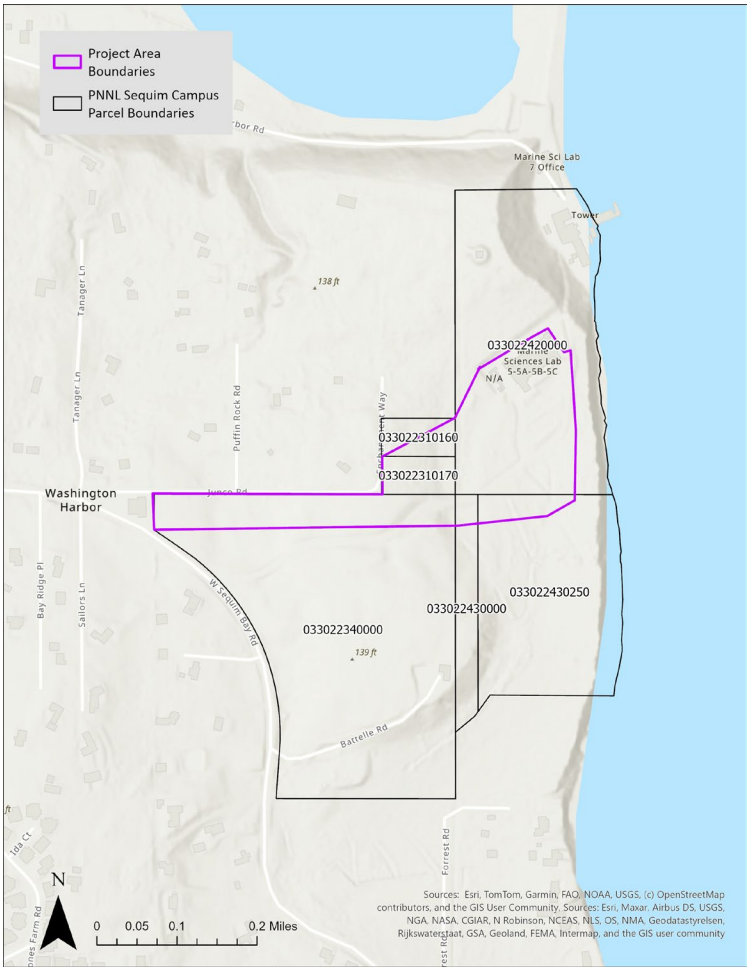
Within the project area, a 0.17 acre (ac) palustrine forested wetland and a 0.05 ac of a maintained stormwater pond were delineated. The Ordinary High-Water Mark (OHWM) was delineated. At the time of the site visit, three areas with mixed hydrology, hydric vegetation, and hydric soils were investigated.

1.2 Property Location

The delineation occurred on Battelle-owned parcels 0330223101700000, 0330224302500000, 0330223400000000, and 0330224300000000, and DOE/PNSO owned parcel 0330224200000000 off of West Sequim Bay Road, as shown in Figure 1-1. The Battelle-owned parcels total approximately 46.7 ac and consist of the paved access road off of Sequim Bay Road, herbaceous areas, scrub/shrub areas, forest, and stormwater ponds. A majority of the area is undeveloped. The DOE/PNSO-owned parcel is approximately 19.6 ac and consists of office spaces, a parking lot, forested areas, and beach and tidelands by the dock and boat launch. The beach and tidelines on the northeastern portion of the parcel were previously delineated in 2024. A vegetation survey of these parcels was conducted May 14-16, 2024.

PNNL staff performed a delineation on July 21 and 22, 2025 within the project area. The study area covered Junco Road, a forested area, and the paved access road to MSL-5 and parking lot. The northern portion of campus was not included within this study area. A previous wetland delineation was completed for the tidally influenced wetlands to the north. Wetland field staff noted if any resource areas identified continued outside of the study area.

Figure 1. An overview of the PNNL – Sequim Campus Parcel Boundaries and the project area.



The three most abundant land use/land cover types (LULCs) within the project area are evergreen forest (9.56 ac), low intensity development (8.23 ac), and developed open space (8.00 ac) land cover (MRLC 2025). Less frequent LULCs are pasture/hay (6.69 ac), medium intensity development (0.88 ac), emergent herbaceous wetlands (0.67 ac), mixed forest (0.67 ac), shrub/scrub (0.67 ac), barren land (0.22 ac), and open water (0.22 ac).

The project area is entirely within the Level III Puget Lowland ecoregion and the Olympic Rainshadow Level IV ecoregion (EPA 2024). Mild maritime climate characterizes the Puget Lowland ecoregion and the distribution of forest species is affected by the rainshadow from the Olympic Mountains. Rolling lowlands occur on a continental glacial trough and consist of many islands, peninsulas, and bays in the Puget Sound area. The Puget Lowland ecoregion extends from the base of the Cascades to the areas surrounding Puget Sound.

The entire project area is within the watershed sub-basin Sequim Bay Frontal (HUC-6: 171100200202, Data Basin 2024). This sub-basin is part of the Dungeness-Elwha watershed (HUC-8: 17110020).

1.3 Stormwater Management

Stormwater at the PNNL – Sequim campus is managed in various ways, with the current plan being the "Pacific Northwest National Laboratory Sequim Campus Wastewater Management Plan" EPRP-MCRL-PLN-001. At the shoreline, any surface water runoff drains directly to the bay, after passing oil water separators. All activities in the area (e.g. soaps for washing vessels) are limited to prevent direct discharges to the bay. Minor surface runoff from the forested upland area of the PNNL–Sequim Campus is expected; any runoff that does occur ultimately percolates into the substrate or drains into the existing drainage ditch following Washington Harbor Road. No outlets are visible or known to discharge water into the Lagoon.

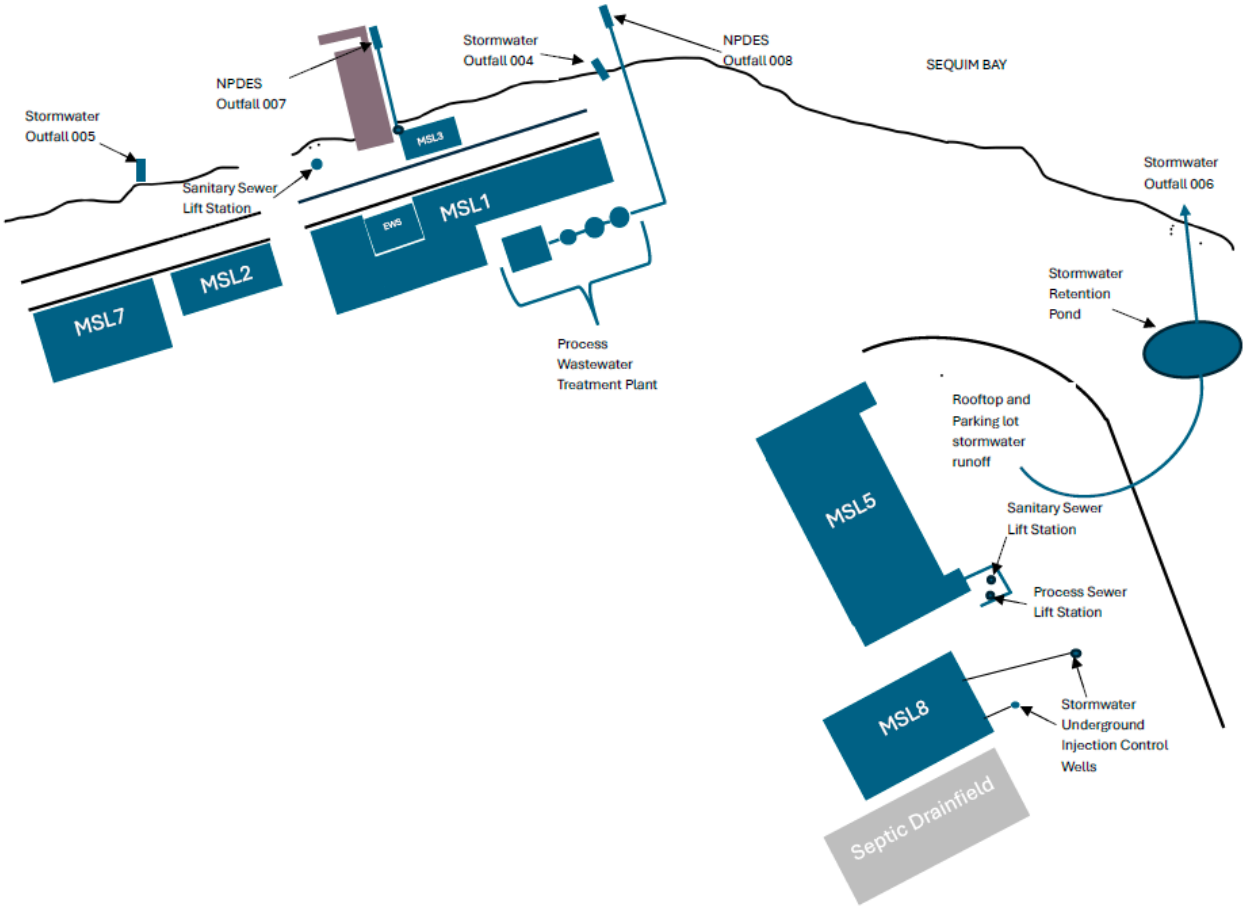
Water quality use designations for Sequim Bay and the Strait of Juan de Fuca are extraordinary quality aquatic life use, primary contact recreational use, all harvest uses, and all miscellaneous uses (aesthetics, boating, commerce/navigation, and wildlife habitat) (WAC 173-201A-612). The extraordinary quality aquatic life use classification requires that water quality "markedly and uniformly exceed the requirements for all uses including, but not limited to, salmonid migration and rearing; other fish migration, rearing, and spawning; clam, oyster, and mussel rearing and spawning; crustaceans and other shellfish (crabs, shrimp, crayfish, scallops, etc.) rearing and spawning" (WAC 173-201A-210). Lower Bell Creek is currently impaired for exceedance of dissolved oxygen, bacteria, and biological integrity water-quality standards (Ecology 2019a). The tidal lagoon and Strait of Juan de Fuca north of the PNNL–Sequim Campus are listed as impaired for aquatic life due to algae growth arising from human causes (Ecology 2019b). However, they are still considered to be exceptional water quality. Therefore, all PNNL – Sequim activities will abide by exceptional water quality criteria.

Discharges to Sequim Bay from the PNNL–Sequim Campus are permitted at two outfalls. The clean process water, filter backwash, and clean seawater are discharged from Outfall 007 located east of the pier. Non-sanitary wastewater from the upland and shoreline areas is treated by the onsite wastewater treatment system and discharged via Outfall 008, located at the east end of the shoreline developed area). Water from laboratory sinks, facility system condensate drains, and mechanical room floor drains in the MSL-5 enters the Upland process sewer system. After pH adjustment (see below), the wastewater then flows into a pump pit, which delivers the water to the WWTP via Ground Cell #2 (normal) or Ground Cell #1 (alternate). A few designated sinks are permitted to discharge water to the sanitary septic system.

Runoff in the developed upland flows through drainage ditches following the PNNL – Sequim driveway and gravel fire suppression road. Runoff includes rainwater and snowmelt from various development, including paved areas and building roofs. Stormwater is directed from the developed upland area drains, via pipeline and drainage ditches to a manmade pond located on private Battelle property offsite of the PNNL– Sequim Campus. Drainage ditches, constructed at the inception of the campus, include 2 crossing the gravel fire suppression road and connected by a culvert. Drainage to the west of the gravel road, near the wetland, does not exist. Within the vicinity of the wetland, there is a culvert that was found during the site visit. The inlet was located; however, the outlet was not found and appears to be buried. This feature does not seem to influence the wetland itself. Minimal flows to the east of the fire suppression road and north of the driveway follow elevation and drain to a culvert near the parking lot. Drainage ditches towards the stormwater pond are from two entry locations – a culvert and conduit, which merge together approximately 200 ft from the driveway. Water directed to this pond either infiltrates or overflows from the pond to a channel that runs southeast and discharges over the bluff to

Sequim Bay. Stormwater from the Sequim Campus Storage Building (MSL-8) rooftop, access road, and loading dock drains to two infiltration trenches with perforated pipe for subsurface infiltration. Two future portable buildings anticipated to be located south of the septic drain field will likely be connected to the same subsurface infiltration as MSL-8.

Figure 2. A diagram of the existing stormwater/wastewater management system within the PNNL – Sequim Campus.



2.0 Methodology

2.1 Preliminary Investigation

The following data sources were reviewed for information on topography, drainage patterns, soils, vegetation, and potential or known wetlands and streams in the project vicinity:

- Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs) Map
- National Wetlands Inventory (NWI) maps (USFWS 2024; FGDC 2013)
- USACE *Western Mountains, Valleys, and Coast Regional Supplement (Version 2.0, May 2010)* coverage
- Natural Resources Conservation Service (NRCS), Web Soil Survey maps of Clallam County (NRCS 2025)
- United States Geological Survey, National Hydrography Dataset Plus (2025)

Scientific plant names were from the USACE National Wetland Plant List (NWPL), version 3.6 (USACE 2022). The hydric soils indicators were based on *Field Indicators of Hydric Soils in the United States: A Guide for Identifying and Delineating Hydric Soils Version 8.2* (NRCS 2018).

As part of the preliminary investigation, PNNL reviewed soil data. Four soils occur within the project area, but none are hydric (Table 1, Appendix A).

Table 1 Soils within the Project Area (NRCS 2025)

Symbol	Soil Name	Hydric Rating
75	Yeary gravelly loam, 0 to 15 percent slopes	No
23	Hoypus gravelly sandy loam, 0 to 15 percent slopes	No
25	Hoypus gravelly loamy sand, 30 to 65 percent slopes	No
10	Catla gravelly sandy loam, 2 to 15 percent slopes	No

2.2 Wetland Delineation and Classification

The OHWM delineation was conducted in accordance with federal and state guidance. The Regulatory Guidance Letter No. 05-05 from the USACE dated December 7, 2005, defines OHWM as "the line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas."

Washington Department of Ecology (Ecology) further defines the OHWM in the WAC (173-22-030(5)), "*…is that mark that will be found by examining the bed and banks and ascertaining where the presence*

and action of waters are so common and usual, and so long continued in all ordinary years, as to mark upon the soil a character distinct from that of the abutting upland, in respect to vegetation as that condition exists on June 1, 1971, as it may naturally change thereafter, or as it may change thereafter in accordance with permits issued by a local government or the department. " WAC 173-22-030(5)(c) describes the OHWM for streams as "*where the ordinary high water mark cannot be found, it shall be the line of mean high water. For braided streams, the ordinary high water mark is found on the banks forming the outer limits of the depression within which the braiding occurs*." Ecology specifically defines streams as "naturally occurring body of periodic or continuously flowing water where a) the mean annual flow is greater than twenty cubic feet per second; and b) the water is contained within a channel." Ecology describes these indicators further in *Determining the Ordinary High Water Mark for Shoreline Management Act Compliance in Washington State* (2016).

The wetland delineation was completed in accordance with the *1987 United States Army Corps Wetlands Delineation Manual,* and *the* USACE *Western Mountains, Valleys, and Coast Regional Supplement (Version 2.0, May 2010)*. The entire project area was within areas covered by the USACE Regional Western Mountains, Valleys, and Coast Supplement. According to the USACE Wetland Delineation Manual (1987), a wetland delineation is based on a three-indicator approach evaluating the presence or absence of hydrophytic vegetation, hydric soil, and wetland hydrology. Data was collected for these characteristics during the delineation with USACE data forms. Classification of all resources used the Cowardin (Cowardin et al. 1979) and the hydrogeomorphic (HGM; NRCS 2008) systems.

The wetland delineation team consists of Dana Vesty and Ioana Bociu. The lead wetland delineator, Dana Vesty, is a certified Professional Wetland Scientist (PWS) with over nine years of experience with wetland delineations in the Northeast and Pacific Northwest. In addition, she has completed Grass, Sedge, and Rush Identification for Western WA Puget Lowland Habitats, How to Determine the Ordinary High Water Mark in Eastern WA, and Using the Revised Washington State Wetland Rating System (2014) in Western Washington coastal training program classes offered by Ecology. Ioana Bociu has over six years of wetland delineation experience, specifically in Oregon and Washington, as well as over ten years in wetland research. She has completed How to Determine the Ordinary High Water Mark in Western WA, Winter Tree and Shrub Identification for Western WA Puget Lowland Habitats, Grass, Sedge, and Rush Identification for Western WA Puget Lowland Habitats, and Using the Revised Washington State Wetland Rating System (2014) in Western Washington.

2.2.1 Wetland Delineation Methodology

On July 21 and 22, 2025, wetland field staff conducted a field survey of the project area to identify resources. When a resource area was found within the project area, a delineation was performed in accordance with the USACE manual, USACE regional supplements, and 2014 Western Washington Rating Form (version 2). Data collection involved completing the associated data form and taking representative photos to document the current conditions of the area. Wetland Determination Data forms are in Appendix B, Western Washington Rating forms in Appendix C, and ground level plot photos are in Appendix D.

In accordance with the USACE manual, the wetland crew established a minimum of two plots per wetland: one within the upland and one within the wetland. Where there was a sharp wetland boundary, paired plots were positioned as close as possible (≤10 feet) to document the wetland boundary. Where the boundaries between wetlands and uplands were more gradual, plots were located close together to demonstrate distinct differences between the wetland and upland. When plots could

not be paired close together, the data sheets noted why this was done. Wherever possible, more than one paired plot was collected for each wetland feature, especially large or complex wetlands. At each plot, the crew determined the presence or absence of hydrophytic vegetation, hydric soils, and wetland hydrology indicators.

Vegetation at each delineated wetland was examined within four strata: trees, shrubs/saplings, herbaceous plants, and woody vines. The crew visually estimated the percent cover of each stratum in circular plots as follows:

- Tree plots had a 30-foot radius. Trees are woody plants three inches or more in diameter at breast height (DBH), regardless of height (USACE *Western Mountains, Valleys, and Coast Regional Supplement*, 2010).

- Shrub/sapling plots had a 15-foot radius. Shrubs and saplings are woody plants less than three inches in DBH (USACE *Western Mountains, Valleys, and Coast Regional Supplement*, 2010).

- Herbaceous plant plots had a 5-foot radius. Herbs are all herbaceous (non-woody) plants, including herbaceous vines, regardless of size (USACE *Western Mountains, Valleys, and Coast Regional Supplement*, 2010).

- Woody vines plots had a 15-foot radius. Woody vines are woody climbing or twining plants (USACE *Western Mountains, Valleys, and Coast Regional Supplement*, 2010).

Plants were identified using Flora of the Pacific Northwest (Hitchcock et al. 2018), Turner's field guides to Pacific Northwest trees, shrubs, and wildflowers (Turner and Gustafson 2006, Turner and Kuhlman 2014), and regional guides to graminoid species (Hitchcock et al. 1969, Roché et al. 2018). Regional keys were supplemented with online information (Oregon Flora 2024, University of Washington Herbarium 2024). Additional guides were used as needed. To the extent possible, plants were identified to species level. If vegetation identification was not possible in the field, multiple pictures and measurements were taken of the distinct plant characteristics. Scientific names follow the current nomenclature of the USACE 2022 National Wetland Plant List (NWPL). All species were assigned the appropriate wetland indicator status from the appropriate Regional Supplement. Presence or absence of hydrophytic vegetation was determined using the rapid test for hydrophytic vegetation, dominance test, and/or prevalence index, as appropriate.

The wetland crew used a trenching shovel or auger to excavate soil test pits within wetland and upland areas to collect soil profile data. Soil test pits were excavated to a minimum of 16 in, unless hydric soils were confirmed at shallower depths or refusal due to rocks and restrictive layers. Deeper test pits were needed to meet thickness requirements for certain hydric soil types. Soil profile characteristics were evaluated using hydric soils manual (USDA *Field Indicators of Hydric Soils in the United States*, 2016). If a profile met one or more hydric soil indicators, these were denoted on the wetland determination form.

The hydrologic indicators were assessed visually in the field during the growing season, in accordance with the USACE Wetlands Delineation Manual. These indicators may include watermarks, drift lines, sediment deposits, saturation, inundation, drainage patterns within wetlands, and dry cracked surface. Additional field indicators can be found in the regional supplemental form. Any further observations were noted on the wetland determination data form.

Pink flagging tape was placed on either wooden stakes or woody vegetation, as applicable, to mark water OHWM and wetland resource boundaries. The spacing of the flagging tape allowed a direct line of sight from one flag to the next and fewer than 25 feet apart. Flagging tape was labeled with a sequential wetland complex number and letter, and the flag number. The letter designates resource area connectivity. Within each complex, labeling started from the inner most resource area outwards. For example, the OHWM would be labeled 1 and the first flag would be marked 1A-1. Flagging continues until the staff reached the project area boundaries. The OHWM extended outside of the project area boundaries and connects around the spit to the other side, where it is back inside the project boundaries. The first flag would be 1B-1, to indicate it is the same resource and is connected to the original line.

A Trimble handheld GPS unit with submeter accuracy collected each flag point, soil test pit, and transect location. Data plots for wetlands were labeled by the feature identifier, plot number, and plot type (wetland or upland).

2.3 Mapping Method

During the field delineation, points, polygons, and polylines were surveyed using a sub-meter Trimble global positioning system (GPS) unit and differential correction software. This data was collected in NAD 1983 State Plane Washington North (meters). The GPS data was post-corrected to an average of 63.35% accurate within two meters and 97.37 % accurate within five meters due to the tree canopy onsite. In addition, an Emlid RS2 receiver was used as a base station for an Emlid RS3 rover to collect the northern forested wetland in RTK formation, with sub meter accuracy. The data was originally collected in NAD83(2011) / Washington North (ftUS) + NAVD88(GEOID18) height (ftUS) with 30 second point averaging. The raw RINEX 3.03 data was corrected through RTCM3 and the WA State Reference Network.

2.4 Field Conditions

The delineation occurred on July 21 and July 22, 2025, on partially cloudy days. The week prior to the delineation (July 13th-July 20th), there was no precipitation according to the climatological data from the station Sequim 2E.

2.4.1 Precipitation Data and Analysis

A precipitation analysis was completed to determine if normal circumstances were present climatically. PNNL obtained monthly summary data and Wetlands Climate Tables (WETS) data from the nearest weather station to the project area. Comparing the historical data from the past 30 years to what was observed during the month of the field visit, the precipitation was within the drier range as shown in Tables 3 and 4.

Table 2 Overview of weather station used in precipitation analysis. All data are accessed from AgACIS (https://agacis.rcc-acis.org/).

Station Name	Latitude	Longitude	Elevation (ft)	Growing Season	County
Sequim 2E	48.0850	-123.0638	50	3/21-11/18 * (242 days)	Clallam

**WETs table dates for each of the weather stations for the years 1993-2024, using the 70% chance for growing season (days 28°F or higher).

Table 3 Percent of normal rainfall for Sequim 2E in October. Data accessed and compiled from AgACIS (https://agacis.rcc-acis.org/)

Sampling Month	Actual Precipitation (in)	Average Precipitation WETS 30 Year* (in)	Comparison to Normal (%)	Precipitation Normal Range WETS 30 Year* (in)	Precipitation Outside WETS 30 Year Range*
July 2025	0.00	0.45	0%	0.20-0.52	Yes

* The 30-year period is from 1993-2024

Table 4. Monthly precipitation analysis for Sequim 2E, Clallam County, with historic precipitation 1993-2024. Data accessed and compiled from AgACIS (https://agacis.rcc-acis.org/).

		Precipitation (in)					Analysis		
Sample Month	Previous Months	Historic Average	30% Chance will have (Min-Max)		Observed at Station	Condition	Value (1 = dry; 2= normal; 3 = wet)	Month Weight	Value * Month Weight
July 2025	June 2024	0.95	0.60	1.14	0.44	Dry	1	3	3
	May 2024	1.22	0.71	1.49	0.69	Dry	1	2	2
	April 2024	1.18	0.83	1.40	0.66	Dry	1	1	1
								Sum	6
								Result	**Drier**

*Rainfall of the prior period was *drier* than normal (product sum 6-9); *normal* (product sum 10-14); or *wetter* than normal (product sum 15-18).

3.0 Description of All Wetlands and Other Non-Wetland Waters

Within the project area, field staff located wetlands and waterways. Resources are defined above in Section 2.2 and summarized below and in Section 3.5. Delineated wetlands, waterways, and sample plot locations are shown on figures in Appendix A. Appendix B contains USACE wetland delineation forms, Appendix C contains the Western Washington Rating forms, and ground-level color photographs of the areas of investigation are provided in Appendix D. Wetland sizes were based off the delineated area within the project area and may be part of a larger complex.

3.1 Non-wetland Waters

Within the project area, a wetland survey crew delineated the OHWM of two intermittent streams and a drainage using the soil and vegetation indicators to determine the line.

Stream 1 is located south of the MSL 5 paved parking lot and as explained in Section 1.3, connects to the existing stormwater system through a culvert. This intermittent stream is approximately 5 feet wide with steep banks, so the OHWM mark coincided with the top of the bank. At the time of the site visit, standing water was observed in portions of the stream, but the water was not flowing.

Similar to Stream 1, Stream 2 is located south of the MSL 5 paved parking lot and connects to the existing stormwater system through a conduit. Stream 2 is located east of Stream 1 and merges with Stream 1 approximately 100 feet north of the stormwater pond. At the time of the site visit, water was not flowing; however, standing water was observed in portions of the stream near the stormwater pond.

There was a 27-foot-long drainage from a culvert located east of the gravel access road near Wetland 3. The inlet was not found at the time of the site visit and no apparent streams were found in the vicinity. There was no continuation of the drainage after 27 feet. No water was present at the time of the site visit.

3.2 Maintained Stormwater Ditches

During the field investigation, survey crew investigated a maintained stormwater depression that runs parallel to the paved access road to MSL 5, stretching from the gravel access road into the forested portion of the site to the parking lot. This depression is located between the toe of a moderate slope and edge of fill associated with the roadway. The depression varies in depth from 1 in to approximately 3 ft and occasionally conveys water. At the time of the site visit, a plot was taken and labeled as Suspect Area 2. A utility line is buried within the depression, which prevented soil sampling below 12 inches. A culvert connects the stormwater ditch to the intermittent streams across the paved access road and parking lot. No standing water was seen in the blocked culvert to the north of the wetland area. As mentioned above in Section 3.1., water was present in stormwater conveyances south of the paved driveway. For a full description of the existing stormwater system, please see Section 1.3.

3.3 Wetlands

Two wetlands were identified during the delineation, as shown on the maps in Appendix A, and are described below.

Wetland 1 is a 0.05-ac managed stormwater retention pond to which Stream 1 and Stream 2 discharge on the southern edge of the project area. The stormwater retention pond extends outside of the project area. There was no wetland fringe on the north portion of the pond, within the project area. Since there was no fringe wetland and the area consisted of open water, no plots were taken within this wetland. There was a distinct boundary between wetland and upland areas. The best Cowardin classification of Wetland 1 is palustrine unconsolidated bottom (PUB), and depressional is the best HGM classification.

As described in Section 3.2, the maintained stormwater ditch was investigated as there was some hydrophytic vegetation near the culvert. Wetland plots were taken as Suspect Area 2 and are provided in Appendix A. At the time of the site visit, hydrophytic vegetation and wetland hydrology indicators were present; however, hydric soils were not present.

Wetland 3 is a 0.17-ac (7,405 square feet) wetland located on a gradual slope west of the gravel access road within a forested area. The upland and wetland plots were taken in the upper portion of the wetland, and soil samples were taken to verify the delineated boundary at the time of the site visit. There was a distinct vegetation and soil boundary between the wetland and upland. There has been previous disturbance in the area near the gravel access road. There is a berm on the eastern edge of the wetland that coincides with the eastern boundary of the wetland. The soil was saturated throughout the soil profile and contained hydrogen sulfide. The wetland primarily receives hydrology from seeps and precipitation. The wetland had patches of sparsely vegetated areas where standing water was pooled, but there was no distinct channel present within the boundaries. No channels were observed discharging into or out of the wetland. Therefore, this wetland is considered isolated from other surface waters within the area. Understory vegetation within the wetland consisted of emergent species with *Carex obnupta* (OBL) and *Lysichiton americanus* (OBL) as the two dominant species. The dominant tree was *Thuja plicata*, which was found on upland islands throughout the wetland with perched roots, indicating stress. The best Cowardin classification of Wetland 3 is palustrine forested wetland with evergreen vegetation (PFO), and slope is the best HGM classification.

3.4 Deviation from NWI

NWI does not have mapped wetlands within the project's study area. Due to the presence of trees within the area and the size of the features, an onsite field survey was needed to identify the wetland and OHWM within the area.

3.5 Summary Table

Within the project area, there were approximately 0.22 ac of wetlands (Table 5). Using the Cowardin classification, the PFO was the dominant type, while slope was the dominant HGM classification.

Table 5. Summary of the water and wetland resources within the survey area by wetland ID, size, classification, and wetland indicators.

Wetland ID	Wetland Size (Acres) within Project Area[a]	Wetland Classification		Wetland Indicators			Extends outside of Study Area
		Cowardian[b]	HGM[c]	Soils	Vegetation	Hydrology	
1	0.05	PUB	D	N/A	N/A	✓	Yes
3	0.17	PFO	S	✓	✓	✓	No

(a) Wetland size is based on the delineated portion of the resource area. Resource areas may be larger outside of the survey area.
(b) NWI Class based on vegetation: PFO= Palustrine Forested, PUB= Palustrine Unconsolidated Bottom (Cowardin et al. 1979).
(c) The hydrogeomorphic characterization of wetlands. This classification system does not classify water bodies. D= Depression, S= Slope

4.0 Regulatory Considerations

4.1 Federal Water Pollution Control Act

Federal law (Section 404 of the Federal Water Pollution Control Act, hereafter referred to as the Clean Water Act or CWA) generally prohibits the discharge of dredged or fill material into waters of the United States (WOTUS), including certain wetlands and streams, without a permit from the USACE. The regulatory definition of WOTUS was amended in 2023. Categories of WOTUS are traditional navigable waters, territorial seas, and interstate waters (collectively referred to as "(a)(1) waters"); impoundments of WOTUS ("(a)(2) waters"); relatively permanent tributaries of (a)(1) or (a)(2) waters ("(a)(3) waters"); wetlands adjacent to (a)(1) waters or relatively permanent (a)(2) or (a)(3) waters and with a continuous surface connection thereto; an some interstate lakes and ponds.

WOTUS excludes certain categories of waters including but not limited to ditches excavated wholly in and draining only dry land and that do not carry a relatively permanent flow of water; water filled depressions created in dry land incidental to construction activity; and swales and erosional features characterized by low volume, infrequent or short duration flow.

4.2 Washington State

Under Section 401 of the CWA, a federal agency may not issue a permit for discharges into WOTUS unless the state where the discharge would originate issues a water quality certification. In Washington State, Ecology is the agency responsible for issuing Section 401 water quality certifications. Ecology is authorized to review and approve Section 401 of the federal CWA. Additionally, Washington State regulates wetlands through the state Water Pollution Control Act (RCW 90.48); the Shoreline Management Act (SMA, RCW 90.58); and through the Growth Management Act (GMA) (RCW 36.70A). The Water Pollution Control Act focuses on water quality protection by regulating discharges and enforcing water quality standards. The SMA regulates marine waters, streams and rivers, lakes, shorelands, wetlands, and 100-year floodplains. The GMA requires cities and counties in Washington to perform comprehensive land use planning, including with respect to wetlands.

The SMA requires all counties and most towns or cities with shorelines to develop and implement Shoreline Master Programs. These programs are meant to establish preferred shoreline uses, protect natural resources against environmental effects, and include public accessibility.

Shorelines include:

- All marine waters.
- Streams and rivers with greater than 20 cubic feet per second (cfs) mean annual flow.
- Lakes 20 acres or larger.
- Upland areas called shorelands that extend 200 feet landward from the edge of these waters.
- Biological wetlands and river deltas connected to these water bodies.
- Some or all of the 100-year floodplain, including all wetlands.

WAC 365-190-090 directs that in designating wetlands for regulatory purposes, counties and cities use the definition of wetlands found in the GMA. The GMA defines wetlands in RCW 36.70A.030 as "areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically

adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. Wetlands do not include those artificial wetlands intentionally created from nonwetland sites, including, but not limited to, irrigation and drainage ditches, grass-lined swales, canals, detention facilities, wastewater treatment facilities, farm ponds, and landscape amenities, or those wetlands created after July 1, 1990, that were unintentionally created as a result of the construction of a road, street, or highway. Wetlands may include those artificial wetlands intentionally created from nonwetland areas created to mitigate conversion of wetlands." The GMA requires wetlands regulated under local development regulations adopted pursuant to the GMA to be delineated in accordance with the SMA.

Based on these definitions, the GMA and SMA apply to Wetland 3. Wetland 1 is an artificially created wetland; therefore, it is not considered a wetland, and the SMA does not apply. In addition, based on the definition of wetland within the GMA that excludes "artificial wetlands intentionally created from nonwetland sites, including, but not limited to, irrigation and drainage ditches, grass-lined swales…", the GMA does not apply to the roadside depression (Suspect Area 2) and Streams 1 and 2. The SMA excludes "streams and rivers less than 20 cfs mean annual flow and biological wetlands and river deltas connected to these water bodies." Suspect Area 2 and Streams 1 and 2 are not connected to a water body nor do they have continuous flow, therefore, the SMA does not apply to these features.

4.3 Clallam County

Under the GMA and SMA, city and county governments regulate wetlands within their jurisdiction. As PNNL-Sequim is within Clallam County jurisdiction, county critical areas ordinances (CAO) apply to wetlands found on the PNNL – Sequim Campus. State regulated wetlands are assigned an additional buffer or distance for protection. Certain protection buffers outlined by Clallam County Code Chapter 27.12 must be followed based on development type and landscape wetland class determined through functional assessment (Table 6). Since Wetland 3 is Category IV and under 10,000 square feet it would not fit local jurisdiction and therefore would not have a local buffer assigned.

Table 6. Clallam County Wetland Landscape Classification (Clallam County Code 27.12.210, Table 4) and buffer distances (Clallam County Code 27.12.215).

Wetland Class	Definition	Major New Development Buffer	Minor New Development Buffer
Class I	• Estuarine wetland habitat types; • Greater than or equal to twenty (20) acres, connected to a significant wildlife habitat movement corridor, and contain at least one significant habitat feature; • Greater than or equal to three (3) acres, dominated by ninety (90) percent native vegetation (excluding contiguous stands of cattails, soft rush, hard hack, and horse tail), containing a forested or scrub-shrub habitat type, containing at least one significant habitat feature, and connected to a significant wildlife habitat movement corridor; and/or • Wetlands of local significance.	200 ft	100 ft

Wetland Class	Definition	Major New Development Buffer	Minor New Development Buffer
Class II	• Greater than or equal to twenty (20) acres and not meeting Class I criteria; or • Less than twenty (20) acres, dominated by fifty (50) percent native vegetation (excluding contiguous stands of cattails, soft rush, hard hack, and horse tail), containing a forested or scrub-shrub habitat type; containing at least one significant habitat feature, and connected to a significant wildlife habitat movement corridor.	150 ft	75 ft
Class III	• Wetlands less than twenty (20) acres which do not satisfy Class I, II, or IV criteria.	75 ft	50 ft
Class IV	• Hydrologically isolated, less than one acre but greater than 10,000 square feet, and dominated by plant cover composed of one of the following native plant species: soft rush, hard hack, horse tail, or cattail, or less than two (2) acres, and dominated by plant cover composed of non-native plant species.	50 ft	25 ft

4.4 Summary of Jurisdiction Assessment

Below is a summary table of the potential jurisdiction of each of the resources identified during the wetland delineation, based on the discussion above.

Table 7. Summary of the water and wetland resources jurisdiction

	Jurisdictional Assessment		
Resource ID	**Federal (CWA)**	**Washington State**	**Clallam County**
Wetland 1	No	No	No
Roadside Ditch (Suspect Area 2)	No	No	No
Wetland 3	No	Yes	No
Stream 1	No	No	No
Stream 2	No	No	No

5.0 Wetland Rating and Buffer

The Washington State Wetland Rating System (Hruby and Yahnke 2023) categorizes wetlands based on specific attributes such as rarity, sensitivity to disturbance, functionality, and replaceability. This "rating" categorizes wetlands into four categories with 1 being the highest and 4 being the lowest. Category 1 wetlands should represent unique wetland types, those highly sensitive to disturbance, impossible to replace within a human lifetime, or high functionality. Category 4 has the lowest levels of functions.

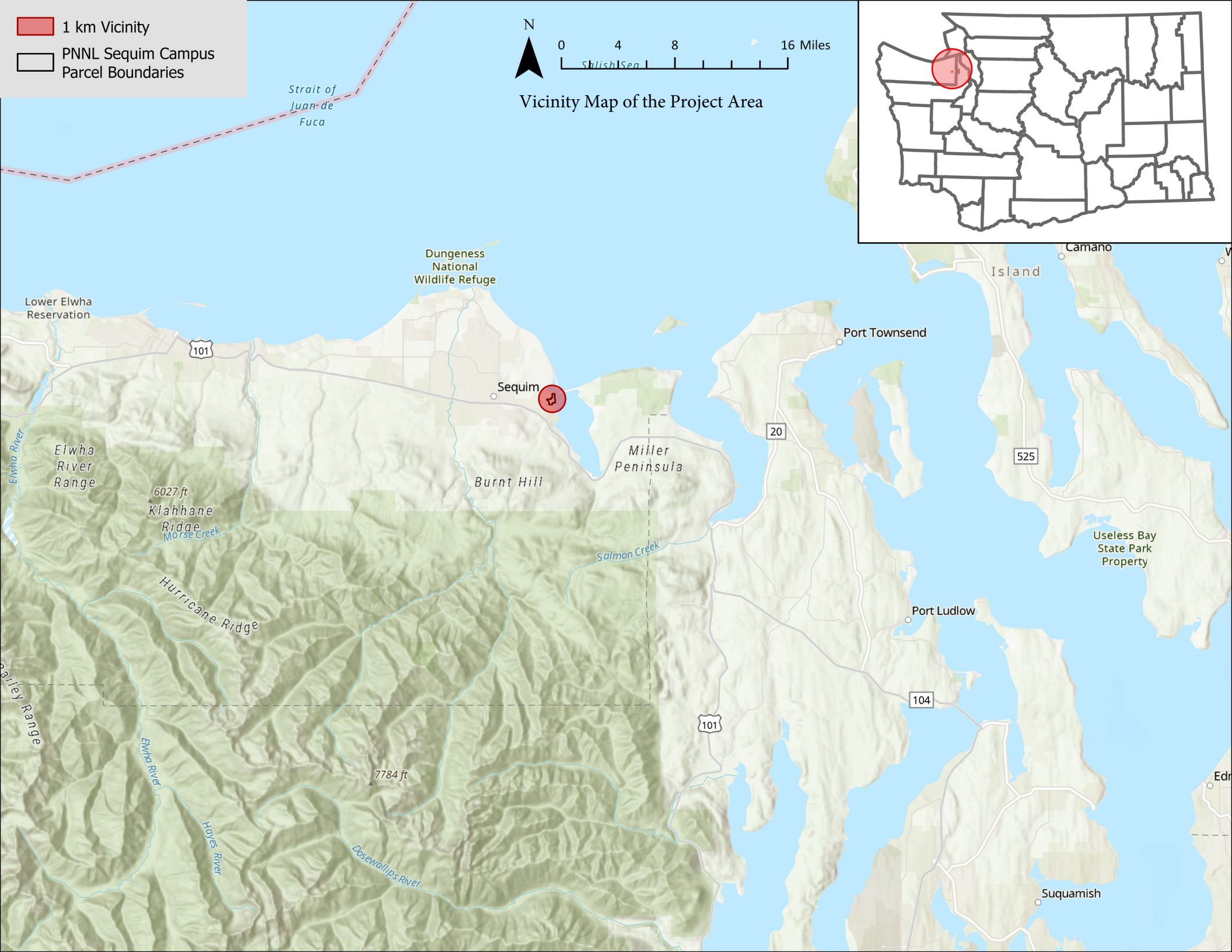
Wetland 3 is a 0.17-ac forested isolated wetland with dense emergent plants in the understory and loam soil for 17 inches. It was relatively undisturbed with no diking, filling, cultivating, or grazing occurring within it, so the potential to improve water quality is medium. The 150 ft area surrounding the wetland is relatively undisturbed and would not generate pollutants or excess runoff, so the potential for the wetland to improve water quality within the landscape is low. Therefore, the wetland potential to improve water quality to society is medium, as it is isolated from other water bodies and is in a relatively undisturbed area.

With the dense understory of *Carex obnupta*, the wetland has medium potential to reduce flooding and stream erosion. However, as stated above, the 150 ft area upstream is relatively undisturbed, so excess runoff is not generated. Therefore, flood storage in the landscape is low and the necessity for flood control within the area is low.

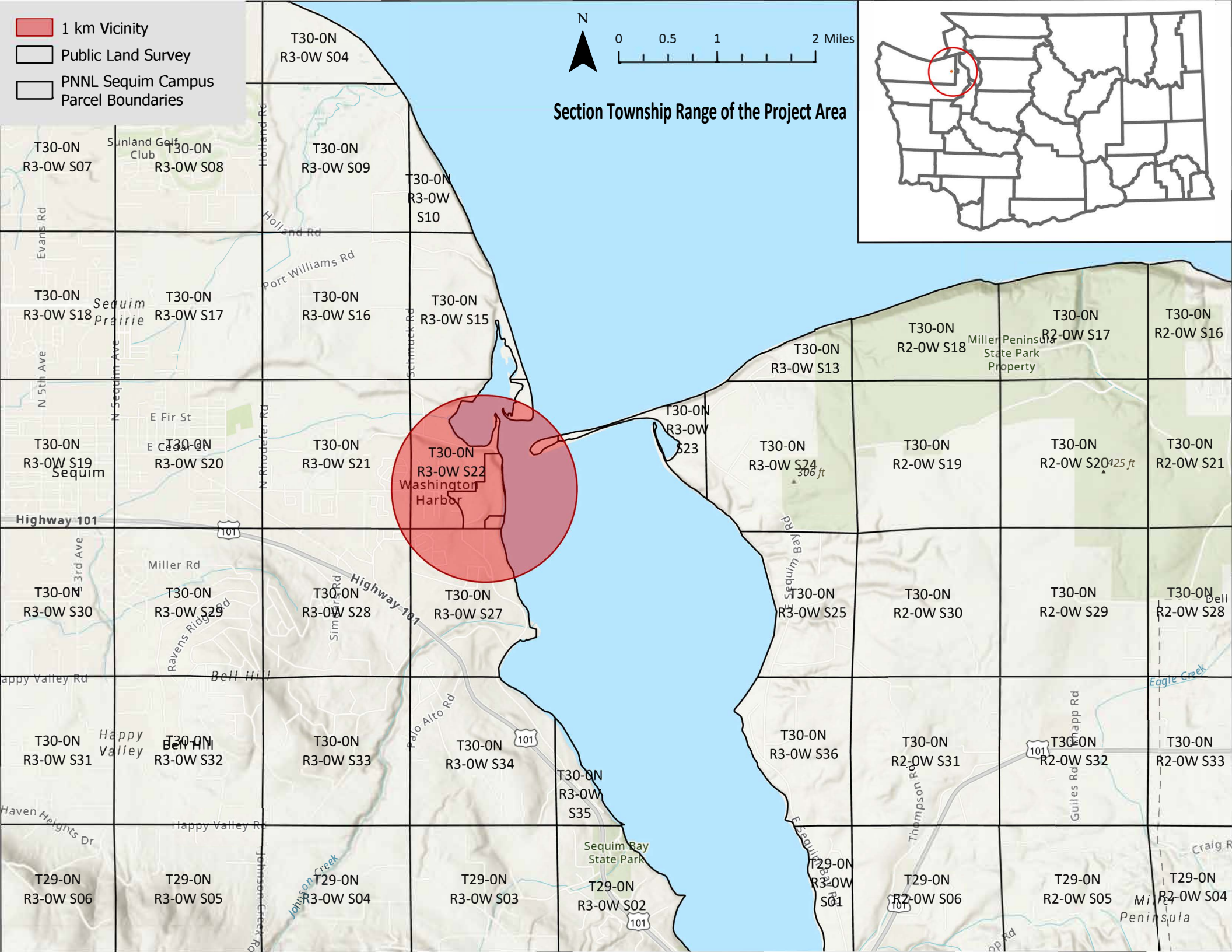
The wetland has three different Cowardian classes and strata present that are moderately interspersed. The vegetation was primarily native species with 5-19 plant species present within the wetland. Overall, the wetland has moderate potential to provide habitat. Accessible habitat to the wetland is high since the 1-km area around the wetland consists of relatively undisturbed areas and low residential development. The wetland has a low value to society since it does not provide habitat for species valued in laws, regulations, or policies.

The rating sheets are provided in Appendix C. Based on these factors and the Western Washington Rating Guide, the wetland is classified as Category 4 slope wetland. This is primarily due to the isolation from other waterbodies, the undisturbed surrounding landscape and the value the wetland provides to society. Within Clallam County, Class IV (Category 4) wetlands are given buffers of 50 ft for major new development and 25 ft for minor new development (Table 6).

Appendix A - Figures



Vicinity Map of the Project Area


1 km Vicinity
Public Land Survey
PNNL Sequim Campus Parcel Boundaries
N
0 0.5 1 2 Miles
Section Township Range of the Project Area
T30-0N R3-0W S04
T30-0N R3-0W S07
T30-0N R3-0W S08
T30-0N R3-0W S09
T30-0N R3-0W S10
T30-0N R3-0W S18
T30-0N R3-0W S17
T30-0N R3-0W S16
T30-0N R3-0W S15
T30-0N R3-0W S19
T30-0N R3-0W S20
T30-0N R3-0W S21
T30-0N R3-0W S22
T30-0N R3-0W S23
T30-0N R3-0W S24
T30-0N R3-0W S13
T30-0N R2-0W S18
T30-0N R2-0W S17
T30-0N R2-0W S16
T30-0N R2-0W S19
T30-0N R2-0W S20
T30-0N R2-0W S21
T30-0N R3-0W S30
T30-0N R3-0W S29
T30-0N R3-0W S28
T30-0N R3-0W S27
T30-0N R3-0W S25
T30-0N R2-0W S30
T30-0N R2-0W S29
T30-0N R2-0W S28
T30-0N R3-0W S31
T30-0N R3-0W S32
T30-0N R3-0W S33
T30-0N R3-0W S34
T30-0N R3-0W S35
T30-0N R3-0W S36
T30-0N R2-0W S31
T30-0N R2-0W S32
T30-0N R2-0W S33
T29-0N R3-0W S06
T29-0N R3-0W S05
T29-0N R3-0W S04
T29-0N R3-0W S03
T29-0N R3-0W S02
T29-0N R3-0W S01
T29-0N R2-0W S06
T29-0N R2-0W S05
T29-0N R2-0W S04
Sunland Golf Club
Holland Re
Holland Rd
Port Williams Rd
Evans Rd
Sequim Prairie
N 5th Ave
N Sequim Ave
Schmuck Rd
N Rhodefer Rd
E Fir St
E Cedar St
Sequim
Washington Harbor
Miller Peninsula State Park Property
306 ft
425 ft
Highway 101
3rd Ave
Miller Rd
Simmons Rd
Ravens Ridge Rd
Sequim Bay Rd
Bell Hill
Happy Valley Rd
Happy Valley
Palo Alto Rd
Eagle Creek
Thompson Rd
Gulles Rd
Chapp Rd
Haven Heights Dr
Sequim Bay State Park
Johnson Creek
Craig R
Miller Peninsula


3A-wet
3A-dry
Wetland 3
Maxar, Microsoft
2A-suspect (dry)
2A-suspect (wet)
3A-dry
3A-wet
Wetland 3
Wetland 1
1A-suspect
Soil Plot
Stream
Delineated Wetlands
ProjectArea
PNN Sequim Campus boundaries
N
Overview of the Wetland Delineation
0
0.03
0.06
0.12 Miles
Wetland 1
1A-suspect
Maxar, Microsoft

National Flood Hazard Layer FIRMette

FEMA

123°3'6"W 48°4'53"N

123°2'28"W 48°4'29"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 9/4/2025 at 3:44 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.


150-ft Buffer off of Wetland 3 and the Cowardian classes observed within the wetland
N
0
0.01
0.01
0.03 Miles
Cowardian
Class
Emergent
Forested with Canopy and Sub-canopy
150 ft. Wetland Buffer

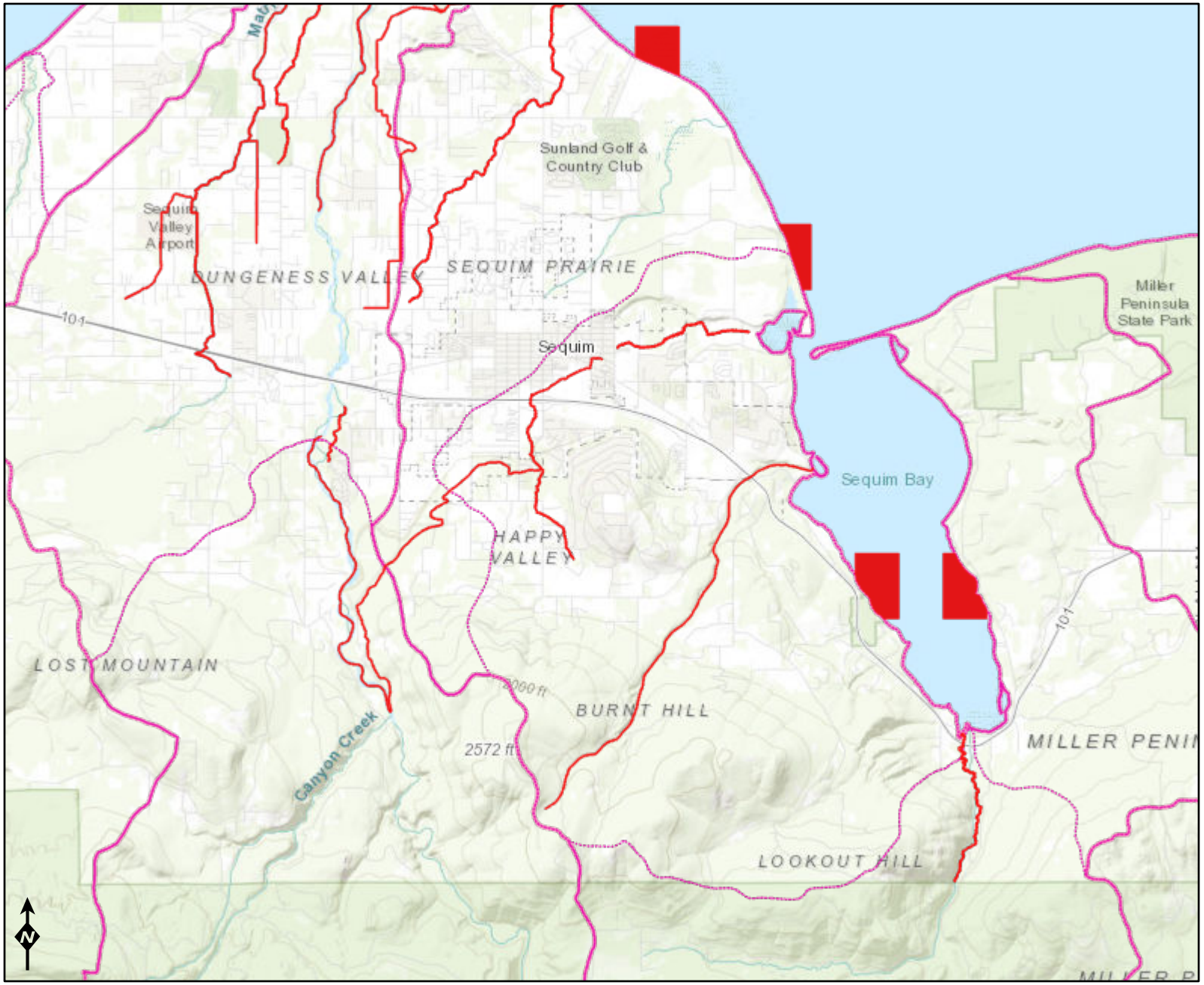

Dense Vegetation observed within Wetland 3
Wetland 3
N
0
0.01
0.01
0.03 Miles
Delineated Wetlands
Delineated Wetlands
150 ft. Wetland Buffer
150 ft. Wetland Buffer
Dense Vegetation
Type
Emergent
Sub-canopy


Hydroperiod of Wetland 3
N
0
0.01
0.01
0.03 Miles
150 ft. Wetland Buffer
150 ft. Wetland Buffer
Hydroperiod
Type
Saturated


1-km Buffer from Wetland 3
1 km Buffer
Delineated Wetland 3 Boundaries
N
0
0.15
0.3
0.6 Miles

September 8, 2025

303(d) Listed Waters in the HUC-10 Basin



Assessed Water/Sediment

Water
- Category 5 - 303d
- Category 4C
- Category 4B
- Category 4A
- Category 2
- Category 1

Sediment
- Category 5 - 303d
- Category 4C
- Category 4B
- Category 4A
- Category 2
- Category 1

Subbasins (10 digit HUCs)
- HUC boundary

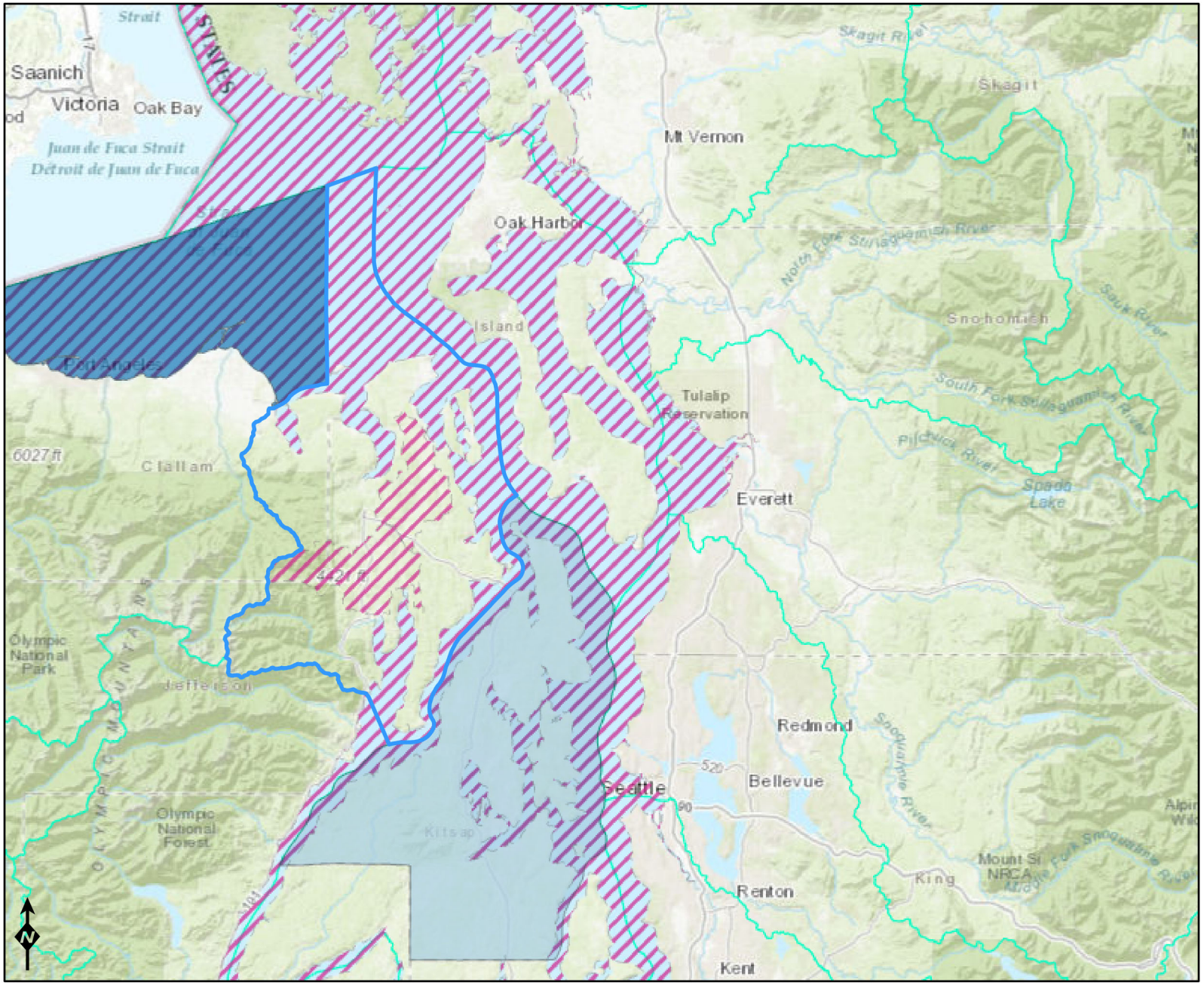
Subbasins (12 digit HUCs)
- HUC boundary

Miles
0 1 2 4

Esri, NASA, NGA, USGS
WA State Parks GIS, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, USDA,

September 8, 2025

WRIA Water Quality Atlas



WQ Improvement Projects

- TMDL - Approved
- 4B - Approved
- STI - Approved
- ARP - Approved
- TMDL - In Development
- STI - In Development
- ARP - In Development

Water Resource Inventory Areas

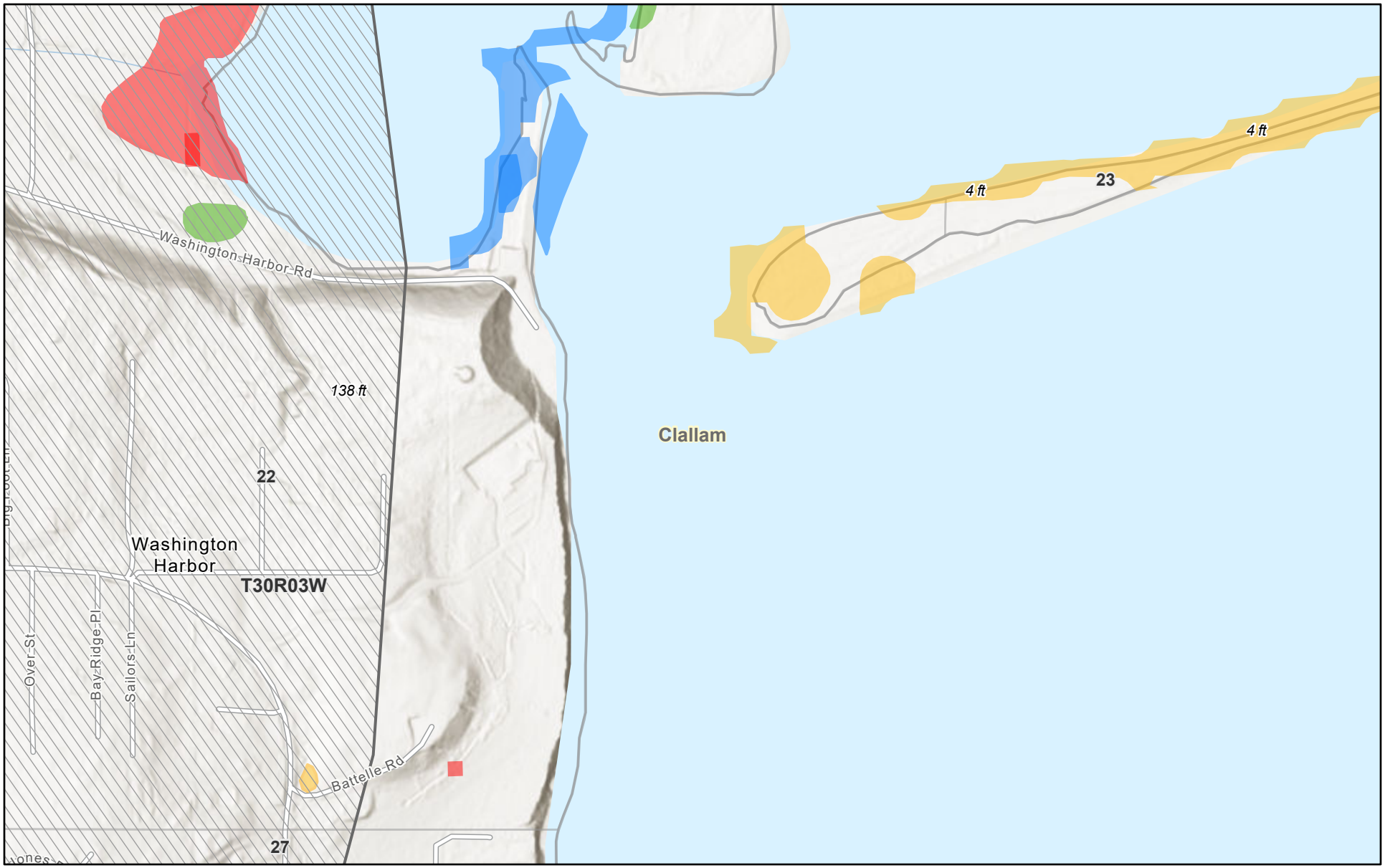
- WRIA boundary

Miles
0 5 10 20

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and

Project Name	Project Type	Project Status	Parameters	Webpage	Report
Strait of Juan de Fuca Dioxin TMDL	TMDL Project	Approved	Dioxin	https://www.ecology.wa.gov/Water-Shorelines/Water-quality/Water-improvement/Total-Maximum-Daily-Load-process/Directory-of-improvement-projects	https://fortress.wa.gov/ecy/publications/summarypages/9210205.html
Kitsap County PIC 4B	4B Project	Approved	Bacteria	-	-
Puget Sound Nutrient Source Reduction Project	ARP	In Development	Dissolved Oxygen, Dissolved Inorganic Nitrogen, Total Organic Carbon	https://www.ecy.wa.gov/Water-Shorelines/Puget-Sound/Helping-Puget-Sound/Reducing-Puget-Sound-nutrients	-
Quilcene/Tarboo MP ARP	ARP	In Development	Bacteria, pH, Dissolved Oxygen	-	-
Chimacum Creek MP ARP	ARP	In Development	Temperature, Bacteria, Dissolved Oxygen	-	-

WNHP Ecological Integrity Assessment Data



9/8/2025, 12:32:15 PM

Historical Rare Plants and Rare & High-quality Ecosystems
- Rare Plant

Wetland Level 1 EIAs
- A (Excellent)
- B (Good)
- C (Fair)
- D (Poor)

Upland Level 1 EIAs
- A (Excellent)
- C (Fair)
- D (Poor)

Public Land Survey Sections

Public Land Survey Townships

State Boundary

County Boundaries

World_Hillshade

1:13,006

0 0.07 0.15 0.3 mi

0 0.1 0.2 0.4 km

WNHP Plant & Ecosystem Map Viewer

KNOWN PLANT AND ECOSYSTEM LOCATIONS REFLECT KNOWN OCCURRENCE LOCATIONS BUT MAY NOT REFLECT ALL OCCURRENCES OF RARE PLANTS OR ECOSYSTEMS.

Appendix B - USACE Wetland Data Forms

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

Project/Site: PNNL Sequim Sewer Water | City/County: Sequim, Clallam | Sampling Date: 07/22/25

Applicant/Owner: Department of Energy (DOE)/ Battelle Memorial Institute (BMI) | State: WA | Sampling Point: 1A-SUSPECT

Investigator(s): Dana Vesty and Ioana Bociu | Section, Township, Range: S22 T30-0N R3-0W

Landform (hillslope, terrace, etc.): Plain | Local relief (concave, convex, none): Concave | Slope (%): 2

Subregion (LRR): LRR A | Lat: 48.07563401 | Long: -123.046502 | Datum: WGS 84

Soil Map Unit Name: 75—Yeary gravelly loam | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If no, explain in Remarks.)

Are Vegetation ___ , Soil ___ , or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___ , Soil ___ , or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	X	No	
Hydric Soil Present?	Yes		No	X
Wetland Hydrology Present?	Yes		No	X

Is the Sampled Area within a Wetland? Yes ___ No X

Remarks: The site was located southwest of the parking lot for Sequim campus, south of the paved access road. The plot was taken in a suspect area with an abundance of field horsetails (*Equisetum arvense*) at the lowest point. This area was located on the fringe of a stormwater pond. A precipitation analysis shows that the area is in its 4th month of below average precipitation, indicating a potential drought; however, normal circumstances are present as the vegetation, and soil does not meet the situations outlined in the problematic wetlands within the Western Mountains, Valleys, and Coast Regional supplement. The drought has not extended for two growing seasons. At the time of the site visit, hydrophytic vegetation was present; however, hydric soil and wetland hydrology indicators were not present.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Alnus rubra*	25	Y	FAC
2.			
3.			
4.			
	25	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15')			
1. *Oemleria cerasiformis*	5	Y	FACU
2. *Salix lasiolepis*	2	Y	FACW
3.			
4.			
5.			
6.			
	7	= Total Cover	

Herb Stratum (Plot size: 5')			
1. *Agrostis exarta*	46	Y	FACW
2. *Equisetum arvense*	45	Y	FAC
3. *Cinna latifolia*	5	N	FACW
4. *Dactylis glomerata*	3	N	FACU
5. *Cirsium arvense*	1	N	FAC
6.			
7.			
8.			
9.			
	100	= Total Cover	

Woody Vine Stratum (Plot size: 15')			
1. *Rubus ursinus*	12	Y	FACU
2. *Rubus armeniacus*	7	Y	FAC
	19	= Total Cover	

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 71.4 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	53	x 2 =	106
FAC species	78	x 3 =	234
FACU species	20	x 4 =	80
UPL species	0	x 5 =	0
Column Totals:	151 (A)		420 (B)

Prevalence Index = B/A = 2.78

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Wetland Non-Vascular Plants[1]
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: The vegetation was above 50% for the dominance test; and the prevalence index was below 3.0, indicating vegetation tended to be FAC and FACW.

SOIL

Sampling Point: 1A-SUSPECT

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-9”	10 YR 3/2	100					Loam	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: N/A

Depth (inches): N/A

Hydric Soil Present? **Yes** ___ **No** **X**

Remarks: The soil plot was taken within a suspect area. Hit refusal at 9 inches deep. No signs of redox within the soil, and the soil profile had to be sprayed with water in order to color. Without redox features, the soil does not meet any of the soil indicators.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): N/A

Water Table Present? Yes ___ No X Depth (inches): N/A

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): N/A

Wetland Hydrology Present? **Yes** ___ **No** **X**

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

Remarks: The plot was taken within the suspect area, approximately 20 ft from the stormwater pond. The soil needed to be sprayed with water in order to color.

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

Project/Site: PNNL Sequim Sewer Water | City/County: Sequim, Clallam | Sampling Date: 07/22/25

Applicant/Owner: Department of Energy (DOE)/ Battelle Memorial Institute (BMI) | State: WA | Sampling Point: 2A-SUSPECT (dry)

Investigator(s): Dana Vesty and Ioana Bociu | Section, Township, Range: S22 T30-0N R3-0W

Landform (hillslope, terrace, etc.): Slope | Local relief (concave, convex, none): Concave | Slope (%): 2

Subregion (LRR): LRR A | Lat: 48.076303 | Long: -123.04682543 | Datum: WGS 84

Soil Map Unit Name: 75—Yeary gravelly loam | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If no, explain in Remarks.)

Are Vegetation ___ , Soil ___ , or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___ , Soil ___ , or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	___	No	X
Hydric Soil Present?	Yes	___	No	X
Wetland Hydrology Present?	Yes	___	No	X

Is the Sampled Area within a Wetland? **Yes** ___ **No** **X**

Remarks: The site was located on southwest of the parking lot for Sequim campus, near the paved access road. The plot was taken in a low spot in a stormwater channel. Hydrophytic vegetation, hydric soils, and wetland hydrology indicators were not present at the time of the site visit. A precipitation analysis shows that the area is in its 4th month of below average precipitation, indicating a potential drought; however, normal circumstances are present as the vegetation, and soil does not meet the situations outlined in the problematic wetlands within the Western Mountains, Valleys, and Coast Regional supplement. The drought has not extended for two growing seasons.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Thuja plicata*	10	Y	FAC
2. *Tsuga heterophylla*	2	N	FACU
3. *Pseudotsuga menziesii*	2	N	FACU
4. *Alnus rubra*	1	N	FAC
	15	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Gaultheria shallon*	5	Y	FACU
2. *Corylus cornuta*	3	Y	FACU
3. *Cytisus scoparius*	2	N	UPL
4. *Mahonia aquifolium*	1	N	FACU
5. *Crataegus monogyna*	1	N	FAC
6.			
	12	= Total Cover	
Herb Stratum (Plot size: 5')			
1. *Holcus lanatus*	30	Y	FAC
2. *Equisetum arvense*	5	N	FAC
3. *Lamium maculatum*	5	N	UPL
4. *Hypochaeris radicata*	4	N	FACU
5. *Leucanthemum vulgare*	4	N	FACU
6. *Taraxacum officinale*	2	N	FACU
7. *Arrhenatherum elatius*	2	N	UPL
8. *Dactylis glomerata*	1	N	FACU
9. *Epilobium ciliatum*	1	N	FACW
10. *Bromus vulgaris*	1	N	FACU
11. *Trifolium repens*	1	N	FAC
	56	= Total Cover	
Woody Vine Stratum (Plot size: 15')			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 44

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	1	x 2 =	2
FAC species	48	x 3 =	144
FACU species	25	x 4 =	100
UPL species	9	x 5 =	45
Column Totals:	83 (A)		291 (B)

Prevalence Index = B/A = 3.5

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ___ **No** **X**

Remarks: The vegetation was not above 50% for the dominance test, and the prevalence index was above 3.0, indicating vegetation tended to be FAC and FACU. *Cytisus scoparius* and *Lamium maculatum* have no indicator statuses on the latest National Wetlands Plant List. According to the Western Mountains, Valleys, and Coast Regional supplement, unlisted species are assumed to have an upland status, thus these species are assumed to have an indicator status of UPL. Most of the vegetation was within the drainage ditch.

SOIL

Sampling Point: 2A-SUSPECT (dry)

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-11”	10 YR 2/1	100					Sandy loam	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: N/A

Depth (inches): N/A

Hydric Soil Present? **Yes** ___ **No** **X**

Remarks: The soil plot was taken within a suspect area. No signs of redox within the soil and the soil profile had to be sprayed with water in order to color. No redox features were observed within the soil and without them, the soil does not meet any of the soil indicators.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	___	No	X	Depth (inches):	N/A
Water Table Present?	Yes	___	No	X	Depth (inches):	N/A
Saturation Present? (includes capillary fringe)	Yes	___	No	X	Depth (inches):	N/A

Wetland Hydrology Present? **Yes** ___ **No** **X**

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

Remarks: The plot was taken within the suspect area, within a stormwater drainage ditch. The soil needed to be sprayed with water in order to color.

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

Project/Site: PNNL Sequim Sewer Water | City/County: Sequim, Clallam | Sampling Date: 07/22/25

Applicant/Owner: Department of Energy (DOE)/ Battelle Memorial Institute (BMI) | State: WA | Sampling Point: 2A-SUSPECT (wet)

Investigator(s): Dana Vesty and Ioana Bociu | Section, Township, Range: S22 T30-0N R3-0W

Landform (hillslope, terrace, etc.): Slope | Local relief (concave, convex, none): Concave | Slope (%): 2

Subregion (LRR): LRR A | Lat: 48.07632 | Long: -123.046796 | Datum: WGS 84

Soil Map Unit Name: 75—Yeary gravelly loam | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If no, explain in Remarks.)

Are Vegetation ___ , Soil ___ , or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___ , Soil ___ , or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	X	No		
Hydric Soil Present?	Yes		No	X	**Is the Sampled Area within a Wetland?** **Yes** ___ **No** X
Wetland Hydrology Present?	Yes	X	No		

Remarks: The site was located southwest of the parking lot for Sequim campus, near the paved access road. The plot was taken in a low spot in a maintained stormwater channel near the mouth of a culvert. Hydrophytic vegetation and wetland hydrology indicators were present; however, hydric soils were not present at the time of the site visit. The hydrophytic vegetation comprised of a small area, approximately 10 square feet. A precipitation analysis shows that the area is in its 4th month of below average precipitation, indicating a potential drought; however, normal circumstances are present as the vegetation, and soil does not meet the situations outlined in the problematic wetlands within the Western Mountains, Valleys, and Coast Regional supplement. The drought has not extended for two growing seasons.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Thuja plicata*	7	Y	FAC
2. *Tsuga heterophylla*	2	N	FACU
3. *Pseudotsuga menziesii*	2	N	FACU
4. *Alnus rubra*	2	N	FAC
	13	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Symphoricarpos albus*	2	Y	FACU
2. *Corylus cornuta*	2	Y	FACU
3. *Cytisus scoparius*	1	N	UPL
4. *Mahonia aquifolium*	1	N	FACU
5. *Gaultheria shallon*	1	N	FACU
6. *Holodiscus discolor*	1	N	FACU
	8	= Total Cover	
Herb Stratum (Plot size: 5')			
1. *Equisetum arvense*	55	Y	FAC
2. *Holcus lanatus*	30	Y	FAC
3. *Epilobium ciliatum*	3	N	FACW
4. *Leucanthemum vulgare*	3	N	FACU
5. *Phalaris arundinacea*	2	N	FACW
6. *Hypochaeris radicata*	1	N	FACU
7. *Cirsium arvense*	1	N	FAC
8.			
	95	= Total Cover	
Woody Vine Stratum (Plot size: 15')			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 5

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 60 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	5	x 2 =	10
FAC species	95	x 3 =	285
FACU species	15	x 4 =	60
UPL species	1	x 5 =	5
Column Totals:	116 (A)		360 (B)

Prevalence Index = B/A = 3.10

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: The vegetation was above 50% for the dominance test but the prevalence index was above 3.0, indicating vegetation tended to be FAC. *Cytisus scoparius* has no indicator statuses on the latest National Wetlands Plant List. According to the Western Mountains, Valleys, and Coast Regional supplement, unlisted species are assumed to have an upland status, thus this species is assumed to have an indicator status of UPL. Most of the vegetation within the herb stratum was within the drainage ditch, while the sapling and tree stratum was located outside of the drainage.

SOIL

Sampling Point: 2A-SUSPECT

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-11”	10 YR 2/1	100					Loam	Gravel within

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: N/A

Depth (inches): N/A

Hydric Soil Present? **Yes** ___ **No** **X**

Remarks: The soil plot was taken within a suspect area. No signs of redox within the soil. Without redox features, the soil does not meet any of the soil indicators. The soil plot was limited to below 12 inches to avoid utilities.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): N/A

Water Table Present? Yes ___ No X Depth (inches): N/A

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 0

Wetland Hydrology Present? **Yes** X **No** ___

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

Remarks: The plot was taken within the suspect area, within a stormwater drainage ditch, near the mouth of a culvert.

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

Project/Site: PNNL Sequim Sewer Water | City/County: Sequim, Clallam | Sampling Date: 07/22/25

Applicant/Owner: Department of Energy (DOE)/ Battelle Memorial Institute (BMI) | State: WA | Sampling Point: 3A-UP

Investigator(s): Dana Vesty and Ioana Bociu | Section, Township, Range: S22 T30-0N R3-0W

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Convex | Slope (%): 3

Subregion (LRR): LRR A | Lat: 48.07615385 | Long: -123.04816982 | Datum: WGS 84

Soil Map Unit Name: 10—Catla gravelly sandy loam | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If no, explain in Remarks.)

Are Vegetation ___ , Soil ___ , or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___ , Soil ___ , or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___	No X	**Is the Sampled Area within a Wetland?**	**Yes ___ No X**
Hydric Soil Present?	Yes ___	No X		
Wetland Hydrology Present?	Yes ___	No X		

Remarks: The site was located on the west of the parking lot for Sequim campus and west of the gravel fire road. The plot was taken on a mound near the wetland boundary. There was a distinct transition between wetland and upland vegetation. Hydrophytic vegetation, hydric soils, and wetland hydrology indicators were not present at the time of the site visit. A precipitation analysis shows that the area is in its 4th month of below average precipitation, indicating a potential drought; however, normal circumstances are present as the vegetation, and soil does not meet the situations outlined in the problematic wetlands within the Western Mountains, Valleys, and Coast Regional supplement. The drought has not extended for two growing seasons.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Thuja plicata*	65	Y	FAC
2. *Alnus rubra*	2	N	FAC
3.			
4.			
	67	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15')			
1. *Gaultheria shallon*	30	Y	FACU
2. *Corylus cornuta*	15	Y	FACU
3. *Symphoricarpos albus*	4	N	FACU
4. *Ilex aquifolium*	3	N	FACU
5. *Oemleria cerasiformis*	3	N	FACU
6. *Sorbus aucuparia*	1	N	UPL
7.			
	56	= Total Cover	

Herb Stratum (Plot size: 5')			
1. *Mycelis muralis*	5	Y	UPL
2. *Polystichum munitum*	2	Y	FACU
3. *Carex obnupta*	1	N	OBL
4.			
5.			
6.			
	8	= Total Cover	

Woody Vine Stratum (Plot size: 15')			
1. *Hedera helix*	3	Y	FACU
2. *Rubus ursinus*	2	Y	FACU
	5	= Total Cover	

% Bare Ground in Herb Stratum 92

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant SpeThe cies That Are OBL, FACW, or: 14.3 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	1	x 1 =	1
FACW species	0	x 2 =	0
FAC species	67	x 3 =	201
FACU species	62	x 4 =	248
UPL species	6	x 5 =	30
Column Totals:	136 (A)		480 (B)

Prevalence Index = B/A = 3.53

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks: The vegetation was not above 50% for the dominance test; and the prevalence index was above 3.0, indicating vegetation tended to be FACU. *Sorbus aucuparia* and *Mycelia muralis* have no indicator statuses on the 2022 National Wetlands Plant List for Western Mountains, Valleys, and Coast. Therefore, these two species were assigned an upland (UPL) indicator status.

SOIL

Sampling Point: 3A-UP

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-15"	7.5 YR 2.5/2	100					Loam	Duff

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: N/A

Depth (inches): N/A

Hydric Soil Present? **Yes** ___ **No** **X**

Remarks: The soil plot was taken within the upland, near the boundary, but on a mound. The soil does not meet any of the indicators. Soils had to be moistened with a spray bottle in order to color.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	___	No	X	Depth (inches):	N/A
Water Table Present?	Yes	___	No	X	Depth (inches):	N/A
Saturation Present? (includes capillary fringe)	Yes	___	No	X	Depth (inches):	N/A

Wetland Hydrology Present? **Yes** ___ **No** **X**

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

Remarks: The plot was taken upslope of the wetland boundary, at a higher elevation than the wetland. There was no water table present and the soil needed to be sprayed in order to color it.

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

Project/Site: PNNL Sequim Sewer Water | City/County: Sequim, Clallam | Sampling Date: 07/22/25

Applicant/Owner: Department of Energy (DOE)/ Battelle Memorial Institute (BMI) | State: WA | Sampling Point: 3A-WET

Investigator(s): Dana Vesty and Ioana Bociu | Section, Township, Range: S22 T30-0N R3-0W

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): None | Slope (%): 5

Subregion (LRR): LRR A | Lat: 48.076201 | Long: -123.04805287 | Datum: WGS 84

Soil Map Unit Name: 10—Catla gravelly sandy loam | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If no, explain in Remarks.)

Are Vegetation ___ , Soil ___ , or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___ , Soil ___ , or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	X	No	
Hydric Soil Present?	Yes	X	No	
Wetland Hydrology Present?	Yes	X	No	

Is the Sampled Area within a Wetland? Yes ___ No X

Remarks: The site was located on the west of the parking lot for Sequim campus and west of the gravel fire road. The area was on a gradual slope extending from West Sequim Bay Road. There was a distinct transition between wetland and upland vegetation. The area appeared to have hydrology from seeps and precipitation. Hydrophytic vegetation, hydric soils, and wetland hydrology indicators were present at the time of the site visit. A precipitation analysis shows that the area is in its 4th month of below average precipitation, indicating a potential drought; however, normal circumstances are present as the vegetation, and soil does not meet the situations outlined in the problematic wetlands within the Western Mountains, Valleys, and Coast Regional supplement. The drought has not extended for two growing seasons.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Thuja plicata*	70	Y	FAC
2. *Acer macrophyllum*	5	N	FACU
3. *Alnus rubra*	2	N	FAC
4. *Pseudotsuga menziesii*	2	N	FACU
	79	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Ilex aquifolium*	3	Y	FACU
2. *Oemleria cerasiformis*	1	Y	FACU
3. *Sambucus nigra*	1	Y	FAC
4.			
5.			
6.			
	5	= Total Cover	
Herb Stratum (Plot size: 5')			
1. *Carex obnupta*	60	Y	OBL
2. *Lysichiton americanus*	5	N	OBL
3. *Polystichum munitum*	2	N	FACU
4.			
5.			
6.			
7.			
8.			
9.			
	67	= Total Cover	
Woody Vine Stratum (Plot size: 15')			
1. *Rubus ursinus*	1	Y	FACU
2.			
	1	= Total Cover	

% Bare Ground in Herb Stratum 33

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	65	x 1 =	65
FACW species	0	x 2 =	0
FAC species	73	x 3 =	219
FACU species	14	x 4 =	56
UPL species	0	x 5 =	0
Column Totals:	152 (A)		340 (B)

Prevalence Index = B/A = 2.24

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤3.0[1]
- X 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Wetland Non-Vascular Plants[1]
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: The vegetation was not above 50% for the dominance test; however, the prevalence index was below 3.0, indicating vegetation tended to be FAC and OBL. *Rubus ursinus* was the only species present in the woody vine stratum, was not rooted in the plot, clambered over other vegetation, and had only 1% cover. Had this species not been present, there would only be 5 dominant species, and dominance test would be greater than 50%. *Thuja plicata* was found on upland islands throughout the wetland with perched roots, indicating stress.

SOIL

Sampling Point: 3A-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-17”	10 YR 2/1	100					Loam	Organic Material found within
17-19”	GLEY 1 3/5GY	100					Sand	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- X Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- X Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: N/A

Depth (inches): N/A

Hydric Soil Present? **Yes** **X** **No** ___

Remarks: The soil plot was taken within the wetland, near the boundary. There was a faint sulfuric smell, which meets the criteria for hydrogen sulfide soil. In addition, the soil had high concentration of organic material as it stained the fingers. The layer was 17 inches deep, fitting the histosol soil indicator.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- X Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- X Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	___	No	X	Depth (inches):	N/A
Water Table Present?	Yes	X	No	___	Depth (inches):	14
Saturation Present? (includes capillary fringe)	Yes	X	No	___	Depth (inches):	0

Wetland Hydrology Present? **Yes** **X** **No** ___

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

Remarks: The plot was taken within the wetland. The soil was saturated throughout the soil profile. The wetland had patches of sparsely vegetated areas where standing water was pooled (hence A1 was checked); however, in the area the plot was taken no surface water was present. In addition, there were upland islands with stressed plants throughout the wetland.

Appendix C - Western Washington Rating

Wetland name or number: Wetland 3

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland 3 Date of site visit: 7/22/2025

Rated by Dana Vesty (PWS) Trained by Ecology? [Yes] No Date of training 12/2/2021

HGM Class used for rating Slope Wetland has multiple HGM classes? Y [N]

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

Source of base aerial photo/map _____

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

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

__✓__**Category IV** – Total score = 9 - 15

FUNCTION	Improving Water Quality			Hydrologic			Habitat			TOTAL
					Circle the appropriate ratings					
Site Potential	H	[M]	L	H	[M]	L	H	[M]	L	
Landscape Potential	H	M	[L]	H	M	[L]	[H]	M	L	
Value	H	[M]	L	H	M	[L]	H	M	[L]	
Score Based on Ratings	5			4			6			15

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]	N/A

Wetland name or number: Wetland 3

Maps and figures required to answer questions correctly for Western Washington

Slope Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	5
Hydroperiods	H 1.2	7
Plant cover of **dense** trees, shrubs, and herbaceous plants	S 1.3	6
Plant cover of **dense, rigid** trees, shrubs, and herbaceous plants (*can be added to figure above)*	S 4.1	6
Boundary of 150 ft buffer (can be added to another figure)	S 2.1, S 5.1	5
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	8
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	9
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	S 3.3	10/11

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 3

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.

SLOPE WETLANDS

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

S 1.0. Does the site have the potential to improve water quality?	
S 1.1. Characteristics of the average slope of the wetland: (A 1% slope has a 1 ft vertical change in elevation for every 100 ft of horizontal distance.) Slope is 1% or less — points = 3 Slope is > 1%-2% — points = 2 Slope is > 2%-5% — points = 1 Slope is greater than 5% — points = 0	2
S 1.2. The soil 2 in. below the surface (or duff layer) is true clay or true organic *(use NRCS definitions)*: Yes = 3 No = 0	0
S 1.3. Characteristics of the plants in the wetland that trap sediments and pollutants: Choose the points appropriate for the description that best fits the plants in the wetland. Dense means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed, and plants are higher than 6 in. Dense, uncut, herbaceous plants > 90% of the wetland area — points = 6 Dense, uncut, herbaceous plants > ½ of area — points = 3 Dense, woody, plants > ½ of area — points = 2 Dense, uncut, herbaceous plants > ¼ of area — points = 1 Does not meet any of the criteria above for plants — points = 0	6
Total for S 1 — Add the points in the boxes above	8

Rating of Site Potential If score is: **__12 = H** **√6-11 = M** **___0-5 = L** *Record the rating on the first page*

S 2.0. Does the landscape have the potential to support the water quality function of the site?	
S 2.1. Is > 10% of the area within 150 ft on the uphill side of the wetland in land uses that generate pollutants? Yes = 1 No = 0	0
S 2.2. Are there other sources of pollutants coming into the wetland that are not listed in question S 2.1? Other sources _____ Yes = 1 No = 0	0
Total for S 2 — Add the points in the boxes above	0

Rating of Landscape Potential If score is: **__1-2 = M** **√0 = L** *Record the rating on the first page*

S 3.0. Is the water quality improvement provided by the site valuable to society?	
S 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	0
S 3.2. Is the wetland in a basin or sub-basin where water quality is an issue? (At least one aquatic resource in the basin is on the 303(d) list.) Yes = 1 No = 0	1
S 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 unit is found.) Yes = 2 No = 0	0
Total for S 3 — 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*

SLOPE WETLANDS

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

S 4.0. Does the site have the potential to reduce flooding and stream erosion?	
S 4.1. Characteristics of plants that reduce the velocity of surface flows during storms: Choose the points appropriate for the description that best fits conditions in the wetland. Stems of plants should be thick enough (usually > 1/8 in), or dense enough, to remain erect during surface flows. Dense, uncut, **rigid** plants cover > 90% of the area of the wetland — points = 1 All other conditions — points = 0	1

Rating of Site Potential If score is: ✓ **1 = M** ___ **0 = L** *Record the rating on the first page*

S 5.0. Does the landscape have the potential to support the hydrologic functions of the site?	
S 5.1. Is more than 25% of the area within 150 ft upslope of wetland in land uses or cover that generate excess surface runoff? Yes = 1 No = 0	0

Rating of Landscape Potential If score is: ___ **1 = M** ✓ **0 = L** *Record the rating on the first page*

S 6.0. Are the hydrologic functions provided by the site valuable to society?	
S 6.1. Distance to the nearest areas downstream that have flooding problems: The sub-basin immediately downgradient of site has flooding problems that result in damage to human or natural resources (e.g., houses or salmon redds) — points = 2 Surface flooding problems are in a sub-basin farther downgradient — points = 1 No flooding problems anywhere downstream — points = 0	0
S 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 S 6 — Add the points in the boxes above	0

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

NOTES and FIELD OBSERVATIONS:

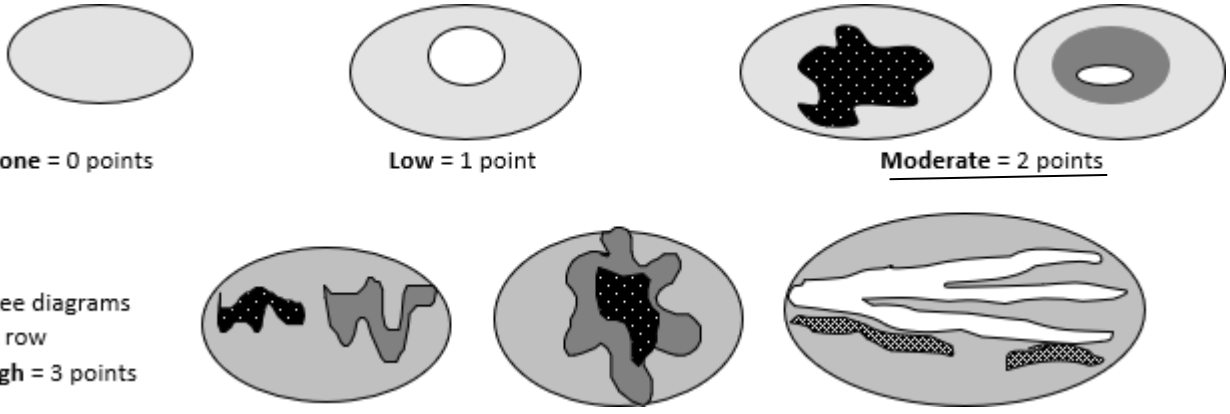
For questions S 1.1, S 2.1, and S 4.1, upslope of the wetland is an undisturbed forest so therefore not likely to generate pollutants or excessive runoff. S 1.2 was answered by looking at the wetland data form (found in Appendix A of the wetland delineation report). Refer to picture 11 in Appendix D to see a representative photo of the emergent vegetation in Wetland 3 for questions S.1.3 and S 4.1. Refer to figure 8 for S 3.1 through S 3.3. For question S.6.1, flooding is not likely within the sub-basin.

For the habitat assessment, the PNNL-Sequim Campus is surrounded by low-residential development to the west. East of the campus is Sequim Bay and Travis Spit, which receive some boat traffic. The dock on campus is used for research activities and is not available to the public. Sequim Bay road is a two-way residential street which may impact wildlife crossing but will not prohibit it. Similarly, the access road to Sequim campus will have traffic on it throughout the work week but will not inhibit animal crossings. Near the wetland there is a relatively undisturbed forest.

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. ____Aquatic bed — 4 structures or more: points = 4 X___Emergent — 3 structures: points = 2 ____Scrub-shrub (areas where shrubs have > 30% cover) — 2 structures: points = 1 X___Forested (areas where trees have > 30% cover) — 1 structure: points = 0 *If the unit has a Forested class, check if:* X___The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/groundcover) that each cover 20% within the Forested polygon	2
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). ____Permanently flooded or inundated — 4 or more types present: points = 3 ____Seasonally flooded or inundated — 3 types present: points = 2 ____Occasionally flooded or inundated — 2 types present: points = 1 X___Saturated only — 1 type present: points = 0 ____Permanently flowing stream or river in, or adjacent to, the wetland ____Intermittently or seasonally flowing stream in, or adjacent to, the wetland ____**Lake Fringe wetland** — **2 points** ____**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 ft^2. 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 interspersion 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	2

H 1.5. Special habitat features: Check the habitat features that are present in the wetland. The number of checks is the number of points. X Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft long). ___ Standing snags (dbh > 4 in.) within the wetland ___ 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) ___ 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) ___ 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) X 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)	2
Total for H 1 — Add the points in the boxes above	7

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?	
H 2.1. Accessible habitat (include only habitat polygons accessible from the wetland. *Calculate:* % relatively undisturbed habitat 25 **+** [(% moderate and low intensity land uses)/2] [75/2] **= 62.5** % Total accessible habitat is: > 1/3 (33.3%) of 1 km Polygon — points = 3 20-33% of 1 km Polygon — points = 2 10-19% of 1 km Polygon — points = 1 < 10% of 1 km Polygon — points = 0	3
H 2.2. Total habitat in 1 km Polygon around the wetland. *Calculate:* % relatively undisturbed habitat 25 **+** [(% moderate and low intensity land uses)/2] [50/2] = 50% Total habitat > 50% of Polygon — points = 3 Total habitat 10-50% and in 1-3 patches — points = 2 Total habitat 10-50% and > 3 patches — points = 1 Total habitat < 10% of 1 km Polygon — points = 0	2
H 2.3. Land use intensity in 1 km Polygon: > 50% of 1 km Polygon is high intensity land use — points = (- 2) ≤ 50% of 1 km Polygon is high intensity — points = 0	0
Total for H 2 — Add the points in the boxes above	5

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?	
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.* Site meets ANY of the following criteria: — points = 2 — It has 3 or more Priority Habitats within 100 m (see next page) — It provides habitat for Threatened or Endangered species (any plant or animal on the state or federal lists) — It is mapped as a location for an individual WDFW Priority Species — It is a Wetland of High Conservation Value as determined by the Department of Natural Resources data — 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 Site has 1 or 2 Priority Habitats (listed on next page) within 100 m — points = 1 Site does not meet any of the criteria above — points = 0	0

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 name or number _____

- **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 name or number Wetland 3

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type *Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.*	**Category**
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 Yes – Go to **SC 1.1** No= **Not an estuarine wetland**	
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? Yes = **Category I** No – Go to **SC 1.2**	**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 *Spartina*, 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 un-mowed grassland. — The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. Yes = **Category I** No = **Category II**	**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] Yes **= Category I** No – Go to **SC 2.2** 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. Yes – Submit data to WA Natural Heritage Program for determination,[136] Go to **SC 2.3** No = **Not a WHCV** 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? Yes = **Category I** No = **Not a WHCV**	**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? *Use the key below.* ***If you answer YES, you will still need to rate the wetland based on its functions.*** 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? Yes – Go to **SC 3.3** No – Go to **SC 3.2** 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? Yes – Go to **SC 3.3** No = **Not a bog** 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? Yes = **Category I bog** No – Go to **SC 3.4** **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? Yes = **Category I bog** No = **Not a bog**	**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 Wetland 3

SC 4.0. Forested Wetlands Does the wetland have at least 1 contiguous acre of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as Priority Habitats? ***If you answer YES, you will still need to rate the wetland based on its functions.*** — **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). Yes = **Category I** No = **Not a forested wetland for this section***	**Cat. I**
* While Wetland 3 is forested, the total acreage is less than 1 ac. Therefore, the answer to this question is No.	
SC 5.0. Wetlands in Coastal Lagoons Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? — 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 *(needs to be measured near the bottom)* — The lagoon retains some of its surface water at low tide during spring tides Yes – Go to **SC 5.1** No = **Not a wetland in a coastal lagoon**	**Cat. I**
SC 5.1. Does the wetland meet all of the following three conditions? — 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 un-mowed grassland. — The wetland is larger than $^{1}/_{10}$ ac (4350 ft^2) Yes = **Category I** No = **Category II**	**Cat. II**
SC 6.0. Interdunal Wetlands Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? ***If you answer YES, you will still need to rate the wetland based on its habitat functions.*** In practical terms that means the following geographic areas: — 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. Yes – Go to **SC 6.1** No = **Not an interdunal wetland for rating**	**Cat I** **Cat. II**
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)? Yes = **Category I** No – Go to **SC 6.2**	
SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger? Yes = **Category II** No – Go to **SC 6.3**	**Cat. III**
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? Yes = **Category III** No = **Category IV**	**Cat. IV**
Category of wetland based on Special Characteristics If you answered No for all types, enter "Not Applicable" on Summary Form	N/A

Appendix D - Ground Level Color Photographs

Project: PNNL-Sequim Estuary Wetland Delineation and Classification

Location: Sequim, Clallam County, WA

Photo No. 1	Direction: Southeast	Date: 07/22/2025

A view of the approximate location of the proposed water and sewer line looking down the paved access road towards Sequim campus.

Photo No. 2	Direction: South	Date: 07/22/2025

A view of the stormwater basins . The maintained stormwater ditch is located within the red circle. A culvert connects the ditch to Stream 1 and the stormwater pond.

Project: PNNL-Sequim Estuary Wetland Delineation and Classification

Location: Sequim, Clallam County, WA

Photo No. 3	Direction: North	Date: 07/22/2025

A view of Suspect Area 1, which was in an open area next to the stormwater pond. The area had mixed vegetation , but the hydrology and hydric soils were not present at the time of the site visit.

Photo No. 4	Direction: North	Date: 07/22/2025

A view of the soils from Suspect Area 1. No redoximorphic features were present or color changes. The soil did not meet any of the hydric soil indicators.

Project: PNNL-Sequim Estuary Wetland Delineation and Classification

Location: Sequim, Clallam County, WA

Photo No. 5	Direction: Northeast	Date: 07/22/2025

A view of stormwater pond (Wetland 1).

Photo No. 6	Direction: North	Date: 07/22/2025

A view of where Stream 1 and Stream 2 converge before the stormwater pond. There was standing water at the time of the site visit, but no flow was observed.

Project: PNNL-Sequim Estuary Wetland Delineation and Classification

Location: Sequim, Clallam County, WA

Photo No. 7	Direction: West	Date: 07/22/2025

A view of the maintained stormwater ditch that runs parallel to the paved access road.

Photo No. 8	Direction: South	Date: 07/22/2025

A view of the maintained stormwater ditch that runs parallel to the paved access road. This area was Suspect Area 2.

Project: PNNL-Sequim Estuary Wetland Delineation and Classification

Location: Sequim, Clallam County, WA

Photo No. 9	Direction: South	Date: 07/22/2025

A view of the saturated soils of Suspect Area 2 in the wet plot.

Photo No. 10	Direction: North	Date: 07/22/2025

A view of the dry soils in Suspect Area 2, the dry plot.

Project: PNNL-Sequim Sewer Water Wetland Delineation and Classification

Location: Sequim, Clallam County, WA

Photo No. 11	Direction: South	Date: 07/22/2025

Overview of Wetland 3A, which was classified as a slope wetland. The wetland was dominated by *Carex obnupta*.

Photo No. 12	Direction: West	Date: 07/22/2025

A view of the soil core for 3A-wet. The soil had a faint odor and had gley colored sand at the bottom of the profile.

Project: PNNL-Sequim Estuary Wetland Delineation and Classification

Location: Sequim, Clallam County, WA

Photo No. 13	Direction: East	Date: 07/22/2025

A view of the sparsely vegetated patches within Wetland 3A and the puddles of standing water.

Photo No. 14	Direction: East	Date: 07/22/2025

A view of the soil core for 3A-dry. The soil had to be sprayed with water in order to be properly colored.

Project: PNNL-Sequim Estuary Wetland Delineation and Classification

Location: Sequim, Clallam County, WA

Photo No. 15	Direction: North	Date: 07/22/2025

A view of Suspect Area 4. Since there was no hydrology and the dominant vegetation was not hydrophytic, no plot was taken in this area.

Photo No.	Direction:	Date:

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