PIERCE COLLEGE – PUYALLUP: STEM BUILDING PROJECT

WETLAND ANALYSIS REPORT

Grette Associates LLC
ENVIRONMENTAL CONSULTANTS

PIERCE COLLEGE – PUYALLUP:
STEM BUILDING PROJECT

WETLAND ANALYSIS REPORT

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1 INTRODUCTION

Grette Associates is under contract to prepare a wetland analysis report that summarizes the critical areas reconnaissance performed in the northeast portion of Pierce College's Puyallup Campus (Figure 1).

The purpose of this critical areas report is to provide a summary of the two areas where the proposed project will discharge stormwater as well as document all wetlands that are located within 300 feet of Pierce College's STEM project for conformance with Chapter 21.06 of the Puyallup Municipal Code (PMC).

Figure 1. Vicinity map

[1] Pierce College's Puyallup Campus is highlighted in yellow.

2 FEATURE SUMMARY

A Grette Associates qualified wetland professional and a Grette Associates biologist visited the campus on March 22, 2022 to identify any wetlands within 300 feet of the proposed project site (Appendix A).

Grette Associates collected wetland delineation data and delineated one wetland feature (Wetland A; Appendix A) that contained all three wetland criteria defined in the U.S. Army Corps of Engineers (USACE) *Federal Wetland Delineation Manual* (1987), and the USACE's *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0)* (2010). Wetland A was rated

according to PMC 21.06.910 and the Washington State Department of Ecology's (Ecology) *Washington State Wetland Rating System for Western WA – 2014 Update* (Hruby 2014). A wetland delineation summary, field datasheets and wetland rating form are presented in Appendices B, C and D, respectively. A summary of the delineated wetland is provided in Table 1.

Given the substantial development (i.e., College Way) which serves as a buffer interruption[1], the proposed project will not impact Wetland A or its associated buffer.

Table 1. Wetland delineation summary

Feature	Cowardin Class[2]	Hydrology Modifier	HGM Class	Wetland Category	Buffer Width[3]
A	PEM/SS	Seasonally Flooded and Saturated	Depressional	III	80 ft.

[1] Classification based on Cowardin et al. (1979).
[2] Buffers are based on PMC 21.06.930.

3 BACKGROUND

3.1 Local Critical Areas Inventory

The City of Puyallup's Public Data Viewer was queried to determine if there are any wetlands mapped in the vicinity of the proposed project site. According the City's database, there is a wetland feature mapped north of Pierce College's STEM project location (Appendix D).

3.2 National Wetlands Inventory

The U.S. Fish and Wildlife Service's National Wetlands Inventory (NWI) was queried to determine if previously-identified wetlands are present within 300 feet of the project site (USFWS 2022). According to the NWI Interactive Online Mapper, there were no wetlands identified within 300 feet of the project site.

3.3 Sensitive Wildlife and Plants

The Washington Department of Fish and Wildlife's (WDFW) Priority Habitats and Species (PHS) database on-line mapper was queried to determine if state or federally listed fish or wildlife species occur near the proposed project site (WDFW 2022). According to the PHS database, no priority species or habitats are mapped in the vicinity of the project site (Appendix D).

The Washington Department of Natural Resources' (WDNR) Wetlands of High Conservation Value mapper was queried to determine if the general campus area occurs in a location reported to contain high quality natural heritage wetland occurrences or occurrences of natural heritage features commonly associated with wetlands (WDNR 2022a). According to WDNR's mapper, there are no records of rare plants or high-quality native ecosystems occurring on or in the vicinity of the campus (Appendix D).

[1] While Chapter 21.06 of the PMC does not address buffer interruptions, Grette Associates was informed by the City's Planning Division (C. Beale, personal communication, December 13, 2021). According to the City's peer-review specialist, it is best available science that substantial development (e.g., paved roads) serve as a buffer interruption.

3.4 State Water Classification System

The Washington Department of Natural Resources' (WDNR) Mapping Tool on-line mapper was queried to identify the water typing of any streams mapped by WDNR (WDNR 2022b). According to WDNR, no stream features are mapped in the vicinity of the campus (Appendix D).

3.5 Soil Information

According to the Natural Resources Conservation Service's (NRCS) Web Soil Survey (NRCS 2022a), the soils within the general assessed area consist of Everett very gravelly sandy loam (0-8 percent slopes), Kapowsin gravelly ashy loam (0-6 percent slopes), Kapowsin gravelly ashy loam (6-15 percent slopes), and Kapowsin gravelly ashy loam (30-65 percent slopes). According to the NRCS, these mapped soils are not listed as hydric.

4 METHODS

The areas in the vicinity of the project site were traversed and data were collected to confirm wetland boundaries. The identified wetland was delineated according to the procedures described in the USACE's *Federal Wetland Delineation Manual* (1987), and the USACE's *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0)* (2010). Paired data plots and soil test pits were excavated to evaluate wetland and upland conditions. Guidance from the USACE's *Regional Supplement* was used to evaluate the data at each data point.

The boundary of the wetland was established based on changes in vegetation, field indicators of hydric soils, water levels at or below 12 inches, topographic changes, and best professional judgment. Data plots were established in and adjacent to the wetland. The location of the wetland boundary was defined by placement of florescent orange flagging tape. The location of each data plot was defined by the placement of pink flagging tape. The wetland boundary flagging was labeled alpha-numerically (i.e., A-2), where the letter designates the wetland and the number designates the specific flag angle point. Please note that only the southern extent of the wetland that is near the project site was flagged.

Plants were determined to be more or less associated with wetlands based on their wetland indicator (FAC) status. The percent dominance for each plant strata was determined using the 50-20 Rule, which is the recommended method for selecting dominant species from a plant community in instances where quantitative data are available (USACE 2010). In utilizing this rule, dominants are the most abundant species that individually or collectively accounts for more than 50 percent of the total coverage of vegetation in the stratum plus any other species that, by itself accounts for at least 20 percent of the total.

4.1 Hydrophytic Vegetation

The U.S. Fish and Wildlife Service (USFWS) and the NWI have established a rating system that has been applied to commonly occurring plant species on the basis of their frequency of occurrence in wetlands (Table 2). Species indicator status expresses the range in which plants may occur in wetlands and non-wetlands (uplands). Under this system, vegetation is considered hydrophytic when there is an indicator status of facultative (FAC), facultative wetland (FACW) or obligate wetland (OBL) (Table 2). The hydrophytic vegetation criterion for wetland determination is met when ***more than*** 50 percent of the

dominant species in the plant community are FAC or wetter. The USACE's *National Wetland Plant List* (USACE 2020) was used to determine vegetation indicator status.

Table 2. Definitions for USFWS plant indicator status

Plant Indicator Status Category	Indicator Status Abbreviation	Definition (Estimated Probability of Occurrence)
Obligate Upland	UPL	Occur rarely (<1 percent) in wetlands, and almost always (>99 percent) in uplands
Facultative Upland	FACU	Occur sometimes (1 percent to <33 percent) in wetlands, but occur more often (>67 percent to 99 percent) in uplands
Facultative	FAC	Similar likelihood (33 percent to 67 percent) of occurring in both wetlands and uplands
Facultative Wetland	FACW	Occur usually in wetlands (>67 percent to 99 percent), but also occur in uplands (1 percent to 33 percent)
Obligate Wetland	OBL	Occur almost always (>99 percent) in wetlands, but rarely occur in uplands (<1 percent)
Not Listed	NL	Not listed due to insufficient information to determine status

4.2 Wetland Hydrology

Evidence of permanent or periodic inundation (water marks, drift lines, drainage patterns), or soil saturation to the surface for 14 consecutive days or more during the growing season meets the hydrology criterion. Oxidized root channels in the top 12 inches and hydrogen sulfide are primary indicators and water-stained leaves and geomorphic position are secondary indicators of wetland hydrology.

4.3 Hydric Soils

Soils that are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper soil horizons are considered hydric soils. Field indicators include histosols, the presence of a histic epipedon, a sulfidic odor, low soil chroma, and gleying. Soil conditions were compared to the Field Indicators of Hydric Soils detailed in the USACE's *Regional Supplement*.

5 PRECIPITATION ANALYSIS

The Puyallup 2.1 ESE, WA Weather Station (US1WAPR0020) recorded no rainfall during the day of the assessment (NOAA 2022). In the 14 days preceding the site assessment, 0.06 inches of rainfall was recorded at the station (NOAA 2022).

The total precipitation recorded at the Puyallup 2.1 ESE station from October 1, 2022 through March 22, 2022 (33.56 inches) was approximately 109 percent of the normal rainfall (30.78 inches) that occurs during the same time (NOAA 2022).

Table 3 below presents an analysis of the appropriate NRCS WETS table (NRCS 2022b) for the three months preceding the field investigation. Please note that the Puyallup 2.1 ESE weather station does not provide WETS data; therefore, the WETS data for McMillin Reservoir (NWS Station 455224) was used. These two stations are located approximately at the same distance from the project site and also situated at similar elevations. Precipitation data from the McMillin Reservoir station was not used in this analysis because the station did not have complete data for the month of February.

Table 3. WETS precipitation analysis Puyallup 2.1 ESE

Preceding Month	WETS Rainfall Percentile[1] (inches)		Measured Rainfall[2] (inches)	Conditions[3]	Condition Value[4]	Month Weight	Value
	30%	70%					
March	3.53	5.00	5.10	Wet	3	3	9
February	3.12	5.58	0.75	Dry	1	2	2
January	3.76	6.62	7.65	Wet	3	1	3
						Sum:	14

[1] WETS percentile was populated from the McMillin Reservoir
[2] Observed rainfall for the month (NOAA 2022)
[3] Dry conditions are below 30% WETS table value, Normal conditions are between 30% and 70% of the WETS table values, Wet conditions are above 70% of the WETS table value.
[4] Dry equals a value of 1, normal equals a value of 2, wet equals a value of 3
[5] Due to the timing of the site assessment, March precipitation results were included in this analysis.

Bins were established to determine the overall rainfall period during the field investigation; drier (sum is 6-9), normal (sum is 10-14), wet (sum is 15-18). A sum of 14 indicates that hydrologic conditions are normal.

6 WETLAND RESULTS

6.1 Wetland A

Wetland A is a palustrine emergent/scrub-shrub wetland the is situated in the northeast portion of the campus (Appendix A). Wetland A is hydrogeomorphically classified as a depressional wetland (Appendix D).

Vegetation within wetland A consist of red alder saplings (*Alnus rubra*, FAC), spiraea (*Spiraea douglasii*, FACW), water parsley (*Oenanthe sarmentosa*, OBL) and reed canary grass (*Phalaris arundinacea*, FACW*).* Also, skunk cabbage (*Lysichiton americanus*, OBL) was observed in the wetland as well. The wetland vegetation observed largely supports FACW and OBL species.

Soils observed within Wetland A were unconsolidated due to the high-water table and soil saturation. Based on these conditions, soils were not able to be accurately evaluated; however, it is Grette Associates' professional opinion that the soils evaluated meets the technical definition of hydric soils. Given the predominance of vegetation that generally has an association with prolonged inundation and/or soil saturation as well as hydrology indicators of prolonged inundation (e.g., algal mat) that were observed within the wetland, the soils within Wetland A are likely saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper soil horizons.

Wetland hydrology observed within the wetland consisted of shallow surface water, alga mat present, saturation, and water table.

6.2 Stormwater Pond

According to the information provided to Grette Associates, there is a potential wetland feature situated east of the project site and in one area where the project would discharge stormwater. Based on Grette Associates' assessment, the area mapped as potential wetland

is a constructed stormwater pond that appears to collect stormwater from the eastern portion of campus (Figures 2 and 3).

Per PMC 21.06.210, wetlands do not include those artificial wetlands intentionally created from non-wetland sites which include, but not limited to, drainage ditches, grass-lined swales, and detention facilities. Therefore, it is Grette Associates' professional opinion, that the stormwater pond is not classified as wetland and subject to the requirements defined in Chapter 21.06 of the PMC.

Figure 2. Stormwater Pond Conveyance Features

[1]The photograph on the left captures the stormwater pond outlet pipe located in the southeastern portion of the stormwater pond and the photograph on the right captures a stormwater catch basin located on top of the earthen berm associated with the stormwater pond.

Figure 3. Stormwater Pond Conditions

6.3 Wetland Categorization

To determine the categorization of Wetland A based on function, the wetland classification guidelines in Ecology's wetland rating system (Hruby 2014) were used. Based on this guidance, each wetland was given a score for each of three functions: Water Quality, Hydrology, and Habitat (Table 4).

Table 4. Wetland rating and categorization summary

Feature	Cowardin Class	HGM Class	Water Quality	Hydrology	Habitat	Total	Category
Wetland A	PEM/SS	Depressional	8	6	5	19	III

Per Chapter 21.06 of the PMC, wetlands are subject to a buffer to protect the integrity and function of said feature. According to PMC 21.06.930, Category III wetlands providing less than moderate habitat function and with high land use are subject to an 80-foot buffer.

6.4 Project Impacts and Stormwater Management

Per PMC 21.06.530, a critical areas report shall include a description of the proposed stormwater management plan, an assessment of potential impacts to critical areas and their associated buffers, and an analysis of mitigation measures taken to avoid and minimize critical area impacts.

The proposed project will be constructed south of College Way which serves as a buffer interruption[2]. As such, the proposed project will not impact Wetland A (north of College Way) or its associated buffer and has therefore demonstrated that the proposed project has implemented all measures to avoid and minimize wetland impacts. Please refer to the stormwater analysis, or like document, that was submitted in support of the proposed project which addresses the proposed stormwater discharge into Wetland A.

6.5 Regulatory Considerations

Wetlands are regulated by agencies at the local, state, and federal levels. At the local level, wetlands and their associated buffers in the City of Puyallup are regulated under the City's critical areas ordinance (Chapter 21.06 of the PMC).

At the state level, wetlands are regulated by the Washington State Department of Ecology through the federal Clean Water Act (Section 401). The requirement for a Water Quality Certification from Ecology for wetland impacts is triggered by an applicant's applying for a federal Clean Water Act Section 404 permit from the USACE. Ecology may also issue an Administrative Order through RCW 90.48 (Water Pollution Control Act), allowing them wetland regulatory authority over Waters of the State without a federal nexus.

At the federal level, impacts (specifically dredging or filling) to wetlands are regulated by the Environmental Protection Agency through the US Army Corps of Engineers. The USACE administers the federal Clean Water Act (Section 404) for projects involving dredging or filling in Waters of the US (lakes, streams, marine waters, and most non-isolated wetlands).

While it is the regulatory agencies that make the final determination regarding jurisdictional status, project proponents can infer jurisdiction using the guidance provided by each agency or local government. This inference can be used to design a project based on the anticipated regulatory constraints within the project area. However, it is the project proponent's responsibility to contact each potential regulating agency and confirm their regulatory status and requirements.

[2] C. Beale, personal communication, December 13, 2021).

6.6 Disclaimer

The findings and conclusions documented in this report have been prepared for specific application to this proposed project site. They have been developed in a manner consistent with that level of care and skill normally exercised by members of the environmental science profession currently practicing under similar conditions in the area. Our work was also performed in accordance with the terms and conditions set forth in our proposal. The conclusions and recommendations presented in this report are professional opinions based on an interpretation of information currently available to us and are made within the operation scope, budget, and schedule of this project. No warranty, expressed or implied, is made. In addition, changes in government codes, regulations, or laws may occur. Because of such changes, our observations and conclusions applicable to this site may need to be revised wholly or in part.

Wetland boundaries are based on conditions present at the time of the site visit and considered preliminary until the flagged wetland and/or drainage boundaries are validated by the appropriate jurisdictional agencies. Validation of the boundaries by the regulating agencies provide a certification, typically in writing, that the wetland boundaries verified are the boundaries that will be regulated by the agencies until a specific date or until the regulations are modified. Only the regulating agencies can provide this certification.

Since wetlands are dynamic communities affected by both natural and human activities, changes in wetland boundaries may be expected. Because of such changes, our observations and conclusions applicable to this site may need to be revised wholly or in part.

7 BIOLOGIST QUALIFICATIONS

7.1 Janae Dinkins

Janae Dinkins is a Biologist with training in wetland delineation and ecologic restoration. Janae also has professional experience in stream and buffer restoration, marine aquatic sampling, mitigation monitoring, and fish and wildlife assessments.

Janae has earned Bachelors of Science degrees in Wildlife & Fisheries and Soil & Crop Sciences from Texas A&M University.

For a list of representative projects, please contact her at Grette Associates.

7.2 Chad Wallin

Chad Wallin is a Biologist with extensive training in wetland science and ecology restoration. Chad also has professional experience in stream and fish restoration, marine monitoring, mitigation monitoring, and fish and wildlife assessments.

Chad has earned a Bachelor's of Arts degree in Environmental Studies from the University of Washington along with certificates in ecology restoration and wetland science.

For a list of representative projects, please contact him at Grette Associates.

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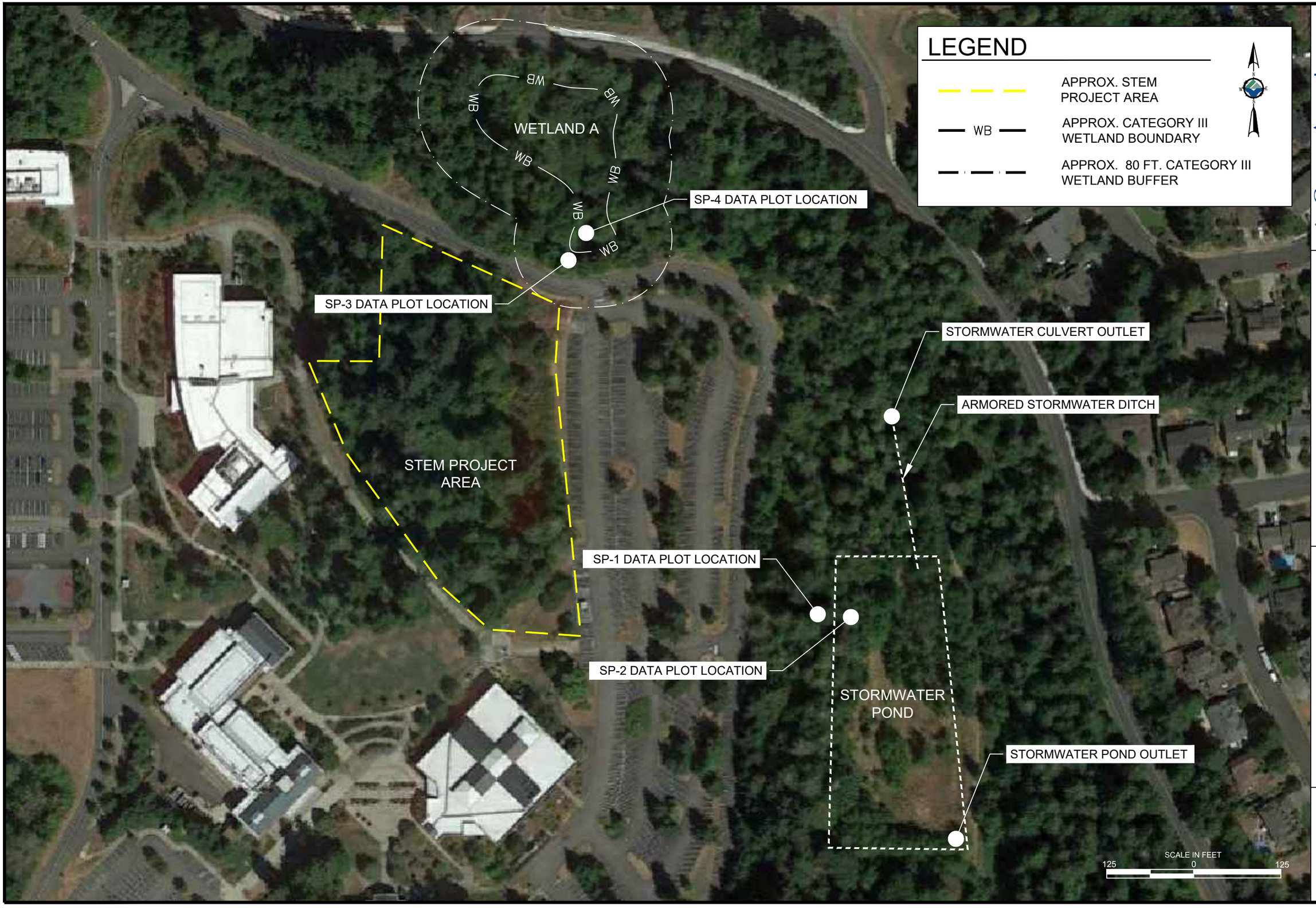
APPENDIX A: WETLAND DELINEATION MAP



LEGEND

- APPROX. STEM PROJECT AREA
- WB — APPROX. CATEGORY III WETLAND BOUNDARY
- APPROX. 80 FT. CATEGORY III WETLAND BUFFER

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PROJECT #: 3062.001
DESIGNED BY: CW — DATE: 04/28/22
CHECKED BY: SM — DATE: 04/28/22

CLIENT: INTEGRUS ARCHITECTURE

PIERCE COLLEGE - PUYALLUP CAMPUS
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SITE ADDRESS: PUYALLUP, WA

DRAWING SCALE: SEE SCALE BAR

DELINEATION MAP

SHEET 1 OF 1

PIERCE COLLEGE-PUYALLUP CAMPUS: STEM PROJECT

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APPENDIX B: WETLAND SUMMARY

WETLAND A SUMMARY		
Approximate Size (sq. ft.):	-	
Cowardin Classification[1]:	PEM/SS	
HGM Classification[2]:	Depressional	
Wetland Category[3]:	III	
Wetland Buffer Width[4]:	80 ft.	
Sample Plot Total[5]:	2	
Hydrophytic Vegetation Present (Y/N)?	Yes	
Hydric Soil Indicator?	Yes	
Wetland Hydrology Present?	Yes	

Summary of Findings	
Dominant Vegetation:	The scrub-shrub area predominately consists of a spiraea (*Spiraea douglasii*) with an understory of native and non-native vegetation. The emergent area largely consists of reed canarygrass (*Phalaris arundinacea*) and skunk cabbage (*Lysichiton americanus*).
Soil Profile:	The soils observed in Wetland A were unconsolidated and were note able to be accurately evaluated.
Primary Hydrological Support:	Hydrologic support for Wetland A is primarily provided by high groundwater table and stormwater discharge.

Wetland Data Plot:	**Upland Data Plot:**
	

Notes:
[1] Classification based on Cowardin et al. (1979).
[2] HGM classification based on Brinson, M.M. (1993).
[3] Wetland rating was determined based on the guidelines defined in the local municipal code.
[4] Wetland buffer was determined based on the local municipal code.
[5] Sample plot total includes the collective amount of wetland and upland samples plots examined to define the wetland boundary.

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APPENDIX C: WETLAND DATASHEETS

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

Project Site: PC-PuyallupCampus - STEM City/County: Puyallup / Pierce Sampling Date: 3/22/22
Applicant/Owner: State: WA Sampling Point: SP-1
Investigator(s): [illegible] Section, Township, Range:
Landform (hillslope, terrace, etc.): Slope Local relief (concave, convex, none): ___ Slope (%): ±35%
Subregion (LRR): Lat: Long: Datum:
Soil Map Unit Name: NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☐ (If no, explain in Remarks.)
Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks: SP-1 near toe of slope of stormwater pond

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. POBA	50%	Y	FAC
2. ALRU	20%	Y	FAC
3. THPL	5%	N	FAC
4.			
50% = ___, 20% = ___	75%	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. GASH	10%	Y	FACU
2.			
3.			
4.			
5.			
50% = ___, 20% = ___	10%	= Total Cover	
Herb Stratum (Plot size: 5')			
1. Misc. grass spp.	80%	Y	FAC ⊛
2. MOSS	10%	N	–
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
50% = ___, 20% = ___	90%	= Total Cover	
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
50% = ___, 20% = ___		= Total Cover	

% Bare Ground in Herb Stratum ___

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 4 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 75% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	___	x1 =	___
FACW species	___	x2 =	___
FAC species	___	x3 =	___
FACU species	___	x4 =	___
UPL species	___	x5 =	___
Column Totals:	___ (A)		___ (B)

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks:

Project Site: ____

SOIL Sampling Point: SP-1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-4"	10YR3/2	100%					Sandy loam	
4-18"+	10YR4/4	100%					Loamy Sand	4/small gravel

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

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ 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: ± 18"

Depth (inches): gravelly hardpan

Hydric Soils Present? Yes ☐ No ☒

Remarks:

No redox observed.

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 Stresses 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 ☒ Depth (inches): ____

Water Table Present? Yes ☐ No ☒ Depth (inches): ____

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): ____

Wetland Hydrology Present? Yes ☐ No ☒

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

Remarks:

Soils moist

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

Project Site: Pierce College - Puyallup STEM City/County: Pierce Sampling Date: 3/22/22
Applicant/Owner: State: WA Sampling Point: SP-2
Investigator(s): Walla Section, Township, Range:
Landform (hillslope, terrace, etc.): Flat/depressional Local relief (concave, convex, none): ___ Slope (%): ___
Subregion (LRR): Lat: Long: Datum:
Soil Map Unit Name: NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☐ (If no, explain in Remarks.)
Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks: SP-2 situated w/ NW corner of stormwater pond.

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. POBA	20%	Y	FAC
2. ALRU	15%	Y	FAC
3.			
4.			
50% = ___, 20% = ___	35%	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
50% = ___, 20% = ___		= Total Cover	
Herb Stratum (Plot size: 5')			
1. JUEF	10%	N	FACW
2. Mix. grasses	80%	Y	FAC*
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
50% = ___, 20% = ___	90%	= Total Cover	
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
50% = ___, 20% = ___		= Total Cover	
% Bare Ground in Herb Stratum ___			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	___	x1 =	___
FACW species	___	x2 =	___
FAC species	___	x3 =	___
FACU species	___	x4 =	___
UPL species	___	x5 =	___
Column Totals:	___ (A)		___ (B)

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks:

Project Site: ____

SOIL

Sampling Point: SP-2

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
0-5"	10YR2/2	100%					Sandy Silt	
5-16"	7.5YR4/2	90%	7.5YR4/6	10%	C	M	silty Sand	

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

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☒ 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: gravelly hardpan

Depth (inches): 16"

Hydric Soils Present? Yes ☒ No ☐

Remarks:

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 Stresses 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 ☐ Depth (inches): surface ⊛

Water Table Present? Yes ☐ No ☒ Depth (inches): ____

Saturation Present? (includes capillary fringe) Yes ☒ No ☐ Depth (inches): @ surface

Wetland Hydrology Present? Yes ☒ No ☐

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

Remarks: Soils saturated w/ upper soil layer (0-5") but just moist below.

⊛ surface water (±2"-3" deep) w/ 24" of pit.

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

Project Site: Pierce College – Puyallup STEM City/County: Puyallup / Pierce Sampling Date: 3/22/22
Applicant/Owner: State: WA Sampling Point: SP-3
Investigator(s): Wallin Section, Township, Range:
Landform (hillslope, terrace, etc.): flat/slope Local relief (concave, convex, none): — Slope (%): <2%
Subregion (LRR): Lat: Long: Datum:
Soil Map Unit Name: NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☐ (If no, explain in Remarks.)
Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks: SP-3 situated near stormwater culvert that discharges to wetland.
SP-3 south of flagged boundary

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. ALRU	40%	Y	FAC
2. THPL	10%	Y	FAC
3.	—	—	—
4.	—	—	—
50% = —, 20% = —	50%	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. RUSP	75%	Y	FAC
2.	—	—	—
3.	—	—	—
4.	—	—	—
5.	—	—	—
50% = —, 20% = —	75%	= Total Cover	
Herb Stratum (Plot size: 5')			
1. Stinging Nettle	20%	FAC	Y
2.	—	—	—
3.	—	—	—
4.	—	—	—
5.	—	—	—
6.	—	—	—
7.	—	—	—
8.	—	—	—
9.	—	—	—
10.	—	—	—
11.	—	—	—
50% = —, 20% = —	20%	= Total Cover	
Woody Vine Stratum (Plot size: —)			
1.	—	—	—
2.	—	—	—
50% = —, 20% = —	—	= Total Cover	

% Bare Ground in Herb Stratum —

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)
Total Number of Dominant Species Across All Strata: 4 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	—	x1 =	—
FACW species	—	x2 =	—
FAC species	—	x3 =	—
FACU species	—	x4 =	—
UPL species	—	x5 =	—
Column Totals:	— (A)		— (B)

Prevalence Index = B/A = —

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks:

Project Site: ____

SOIL

Sampling Point: SP-3

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR3/3	100%					loam	
8-18+	7.5YR4/3	75%	7.5YR4/6	5%	C	M	silty 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: ____

Depth (inches): ____

Hydric Soils Present? Yes ☐ No ☑

Remarks:

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 Stresses 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 ☑ Depth (inches): ____

Water Table Present? Yes ☐ No ☑ Depth (inches): ____

Saturation Present? (includes capillary fringe) Yes ☐ No ☑ Depth (inches): ____

Wetland Hydrology Present? Yes ☐ No ☑

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

Remarks:

Soils moist

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

Project Site: Pierce College - Puyallup STEM City/County: Puyallup/Pierce Sampling Date: 3/22/22
Applicant/Owner: State: WA Sampling Point: SP-4
Investigator(s): Walth Section, Township, Range:
Landform (hillslope, terrace, etc.): Depressional Local relief (concave, convex, none): ___ Slope (%): ___
Subregion (LRR): Lat: Long: Datum:
Soil Map Unit Name: NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☐ (If no, explain in Remarks.)
Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☐ No ☐
Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks: SP-4 situated w/ southern portion of wetland

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. ALRU	20%	Y	FAC
2.			
3.			
4.			
50% = ___, 20% = ___	20%	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
50% = ___, 20% = ___		= Total Cover	
Herb Stratum (Plot size: 5')			
1. PHAR	40%	Y	FACW
2. OESA	20%	Y	OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
50% = ___, 20% = ___	60%	= Total Cover	
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
50% = ___, 20% = ___		= Total Cover	

% Bare Ground in Herb Stratum 40%

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	___	x1 =	___
FACW species	___	x2 =	___
FAC species	___	x3 =	___
FACU species	___	x4 =	___
UPL species	___	x5 =	___
Column Totals:	___ (A)		___ (B)

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks:
Evergreen huckleberry & elderberry are w/plot, however, these species are growing on a mound and not reflective of wetland. As a result, not included in plot.

Project Site: ____

SOIL Sampling Point: SP-4

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks

[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: ____

Depth (inches): ____

Hydric Soils Present? Yes ☒ No ☐

Remarks:

Soils unconsolidated due to water table and saturation.
Given FACW and OBL species observed and geo. position, soils likely meet hydric soil definitions

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 Stresses 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 ☐ Depth (inches): ±6" (*)

Water Table Present? Yes ☒ No ☐ Depth (inches): surface

Saturation Present? (includes capillary fringe) Yes ☒ No ☐ Depth (inches): surface

Wetland Hydrology Present? Yes ☒ No ☐

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

Remarks:

(*) surface water w/ 24" of plot

PIERCE COLLEGE-PUYALLUP CAMPUS: STEM PROJECT

WETLAND ANALYSIS REPORT

APPENDIX D: WETLAND RATING FORM

Wetland name or number A

RATING SUMMARY – Western Washington

Name of wetland (or ID #): PC-Pierce College- STEM Date of site visit: 03/22/22

Rated by J. Dinkins Trained by Ecology? ☑ Yes ☐ No Date of training 2021

HGM Class used for rating Depressional Wetland has multiple HGM classes? ☐ Y ☑ N

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

Source of base aerial photo/map Google

OVERALL WETLAND CATEGORY III (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	
		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 ☐	**TOTAL**
Score Based on Ratings	8	6	5	19

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	☑

Wetland name or number A___

Maps and figures required to answer questions correctly for Western Washington

Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	D 1.3, H 1.1, H 1.4	Fig. 1
Hydroperiods	D 1.4, H 1.2	Fig. 2
Location of outlet (*can be added to map of hydroperiods)*	D 1.1, D 4.1	Fig. 2
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	D 2.2, D 5.2	Fig. 1
Map of the contributing basin	D 4.3, D 5.3	Fig. 3
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	Fig. 4
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	Fig. 5
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	Fig. 6/7

Riverine Wetlands

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

Lake Fringe Wetlands

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

Slope Wetlands

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

Wetland name or number A

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 sheetflow, 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).

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.

Wetland name or number A

☑ NO – go to 6 ☐ **YES** – The wetland class is **Riverine**

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

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

☐ NO – go to 7 ☑ **YES** – The wetland class is **Depressional**

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

☑ NO – go to 8 ☐ **YES** – The wetland class is **Depressional**

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

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

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

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

Wetland name or number A

DEPRESSIONAL AND FLATS WETLANDS

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

D 1.0. Does the site have the potential to improve water quality?	
D 1.1. Characteristics of surface water outflows from the wetland: Wetland is a depression or flat depression (QUESTION 7 on key) with no surface water leaving it (no outlet). points = 3 ☑ Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet. points = 2 ☐ Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 1 ☐ Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch. points = 1 ☐	3
D 1.2. The soil 2 in below the surface (or duff layer) is true clay or true organic *(use NRCS definitions)*. Yes = 4 No = 0	0
D 1.3. Characteristics and distribution of persistent plants (Emergent, Scrub-shrub, and/or Forested Cowardin classes): Wetland has persistent, ungrazed, plants > 95% of area points = 5 ☑ Wetland has persistent, ungrazed, plants > ½ of area points = 3 ☐ Wetland has persistent, ungrazed plants > $^1/_{10}$ of area points = 1 ☐ Wetland has persistent, ungrazed plants < $^1/_{10}$ of area points = 0 ☐	5
D 1.4. Characteristics of seasonal ponding or inundation: *This is the area that is ponded for at least 2 months. See description in manual.* Area seasonally ponded is > ½ total area of wetland points = 4 ☑ Area seasonally ponded is > ¼ total area of wetland points = 2 ☐ Area seasonally ponded is < ¼ total area of wetland points = 0 ☐	4
Total for D 1 — Add the points in the boxes above	12

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

D 2.0. Does the landscape have the potential to support the water quality function of the site?	
D 2.1. Does the wetland unit receive stormwater discharges? Yes = 1 No = 0	1
D 2.2. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants? Yes = 1 No = 0	1
D 2.3. Are there septic systems within 250 ft of the wetland? Yes = 1 No = 0	0
D 2.4. Are there other sources of pollutants coming into the wetland that are not listed in questions D 2.1-D 2.3? Source_____ Yes = 1 No = 0	0
Total for D 2 — Add the points in the boxes above	2

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

D 3.0. Is the water quality improvement provided by the site valuable to society?	
D 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, lake, or marine water that is on the 303(d) list? Yes = 1 No = 0	0
D 3.2. Is the wetland in a basin or sub-basin where an aquatic resource is on the 303(d) list? Yes = 1 No = 0	1
D 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality (*answer YES if there is a TMDL for the basin in which the unit is found*)? Yes = 2 No = 0	2
Total for D 3 — Add the points in the boxes above	3

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

Wetland name or number A

DEPRESSIONAL AND FLATS WETLANDS

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

D 4.0. Does the site have the potential to reduce flooding and erosion?

D 4.1. Characteristics of surface water outflows from the wetland:

Wetland is a depression or flat depression with no surface water leaving it (no outlet)	points = 4	☑
Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet	points = 2	☐
Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch	points = 1	☐
Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing	points = 0	☐

4

D 4.2. Depth of storage during wet periods: *Estimate the height of ponding above the bottom of the outlet. For wetlands with no outlet, measure from the surface of permanent water or if dry, the deepest part.*

Marks of ponding are 3 ft or more above the surface or bottom of outlet	points = 7	☐
Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet	points = 5	☐
Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet	points = 3	☑
The wetland is a "headwater" wetland	points = 3	☐
Wetland is flat but has small depressions on the surface that trap water	points = 1	☐
Marks of ponding less than 0.5 ft (6 in)	points = 0	☐

3

D 4.3. Contribution of the wetland to storage in the watershed: *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.*

The area of the basin is less than 10 times the area of the unit	points = 5	☐
The area of the basin is 10 to 100 times the area of the unit	points = 3	☑
The area of the basin is more than 100 times the area of the unit	points = 0	☐
Entire wetland is in the Flats class	points = 5	☐

3

Total for D 4	Add the points in the boxes above	10

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

D 5.0. Does the landscape have the potential to support hydrologic functions of the site?

D 5.1. Does the wetland receive stormwater discharges?	Yes = 1 No = 0	1
D 5.2. Is >10% of the area within 150 ft of the wetland in land uses that generate excess runoff?	Yes = 1 No = 0	1
D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses (residential at >1 residence/ac, urban, commercial, agriculture, etc.)?	Yes = 1 No = 0	1
Total for D 5	Add the points in the boxes above	3

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

D 6.0. Are the hydrologic functions provided by the site valuable to society?

D 6.1. The unit is in a landscape that has flooding problems. *Choose the description that best matches conditions around the wetland unit being rated. Do not add points. Choose the highest score if more than one condition is met.*

The wetland captures surface water that would otherwise flow down-gradient into areas where flooding has damaged human or natural resources (e.g., houses or salmon redds):

• Flooding occurs in a sub-basin that is immediately down-gradient of unit.	points = 2	☐
• Surface flooding problems are in a sub-basin farther down-gradient.	points = 1	☐
Flooding from groundwater is an issue in the sub-basin.	points = 1	☐
The existing or potential outflow from the wetland is so constrained by human or natural conditions that the water stored by the wetland cannot reach areas that flood. *Explain why* Wetland contains no outlet.	points = 0	☑
There are no problems with flooding downstream of the wetland.	points = 0	☐

0

D 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan? Yes = 2 No = 0 — 0

Total for D 6	Add the points in the boxes above	0

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

Wetland name or number A

These questions apply to wetlands of all HGM classes.

HABITAT FUNCTIONS - Indicators that site functions to provide important habitat

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

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

- ☐ Aquatic bed
- ☑ Emergent
- ☑ Scrub-shrub (areas where shrubs have > 30% cover)
- ☐ Forested (areas where trees have > 30% cover)

4 structures or more: points = 4
3 structures: points = 2
2 structures: points = 1
1 structure: points = 0

If the unit has a Forested class, check if:

- ☐ The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the Forested polygon

1

H 1.2. Hydroperiods

Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ ac to count (*see text for descriptions of hydroperiods*).

- ☐ Permanently flooded or inundated
- ☑ Seasonally flooded or inundated
- ☐ Occasionally flooded or inundated
- ☑ Saturated only

4 or more types present: points = 3
3 types present: points = 2
2 types present: points = 1
1 type present: points = 0

- ☐ Permanently flowing stream or river in, or adjacent to, the wetland
- ☐ Seasonally flowing stream in, or adjacent to, the wetland
- ☐ **Lake Fringe wetland** **2 points**
- ☐ **Freshwater tidal wetland** **2 points**

1

H 1.3. Richness of plant species

Count the number of plant species in the wetland that cover at least 10 ft^2.

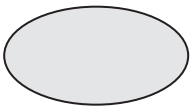
Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. ***Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle***

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

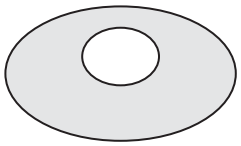
1

H 1.4. Interspersion of habitats

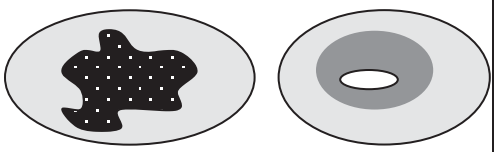
Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always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



None = 0 points ☐

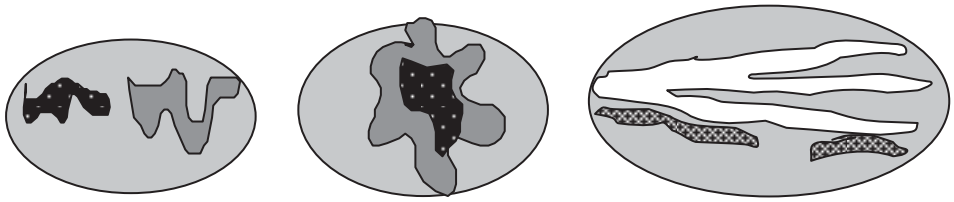


Low = 1 point ☑



Moderate = 2 points ☐

All three diagrams in this row are **HIGH** = 3points ☐



1

Wetland name or number A

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.* ☑ 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 extends at least 3.3 ft (1 m) over 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)* ☐ Invasive plants cover less than 25% of the wetland area in every stratum of plants (*see H 1.1 for list of strata*)	3
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 that directly abuts wetland unit*). *Calculate:* % undisturbed habitat 7.73 **+** [(% moderate and low intensity land uses)/2] 0.00 **=** 7.73 % If 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	1
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate:* % undisturbed habitat 25.67 **+** [(% moderate and low intensity land uses)/2] 7.21 **=** 32.88 % Undisturbed habitat > 50% of Polygon points = 3 Undisturbed habitat 10-50% and in 1-3 patches points = 2 Undisturbed habitat 10-50% and > 3 patches points = 1 Undisturbed habitat < 10% of 1 km Polygon points = 0	1
H 2.3. Land use intensity in 1 km Polygon: If > 50% of 1 km Polygon is high intensity land use points = (- 2) ≤ 50% of 1 km Polygon is high intensity points = 0	-2
Total for H 2 Add the points in the boxes above	0

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 ☐ 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 ☐	1

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

Wetland name or number A

WDFW Priority Habitats

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp. http://wdfw.wa.gov/publications/00165/wdfw00165.pdf or access the list from here: http://wdfw.wa.gov/conservation/phs/list/)

Count how many of the following priority habitats are within 330 ft (100 m) of the wetland unit: ***NOTE:*** *This question is independent of the land use between the wetland unit and the priority habitat.*

— **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 (*full descriptions in WDFW PHS report*).

— **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.

— **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) 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.

— **Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158 – see web link above*).

— **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.

— **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161 – see web link above*).

— **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.

— **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report – see web link on previous page).*

— **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.

— **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.

— **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.

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list because they are addressed elsewhere.

Wetland name or number A

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 page 25) ☐ — 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. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? ☐Yes – Go to **SC 2.2** ☐No – Go to **SC 2.3** SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? ☐Yes = **Category I** ☐No = **Not a WHCV** SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf ☐Yes – **Contact WNHP/WDNR and go to SC 2.4** ☐No = **Not a WHCV** SC 2.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website? ☐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 = **Is 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 = **Is a 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 = **Is a Category I bog** ☐No = **Is not a bog**	**Cat. I**

Wetland name or number A

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**
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)* ☐Yes – Go to **SC 5.1** ☐No = **Not a wetland in a coastal lagoon** 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 on p. 100). — 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. I** **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 ☐Yes – Go to **SC 6.1** ☐No = **not an interdunal wetland for rating** 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** 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 I** **Cat. II** **Cat. III** **Cat. IV**
Category of wetland based on Special Characteristics If you answered No for all types, enter "Not Applicable" on Summary Form	N/A

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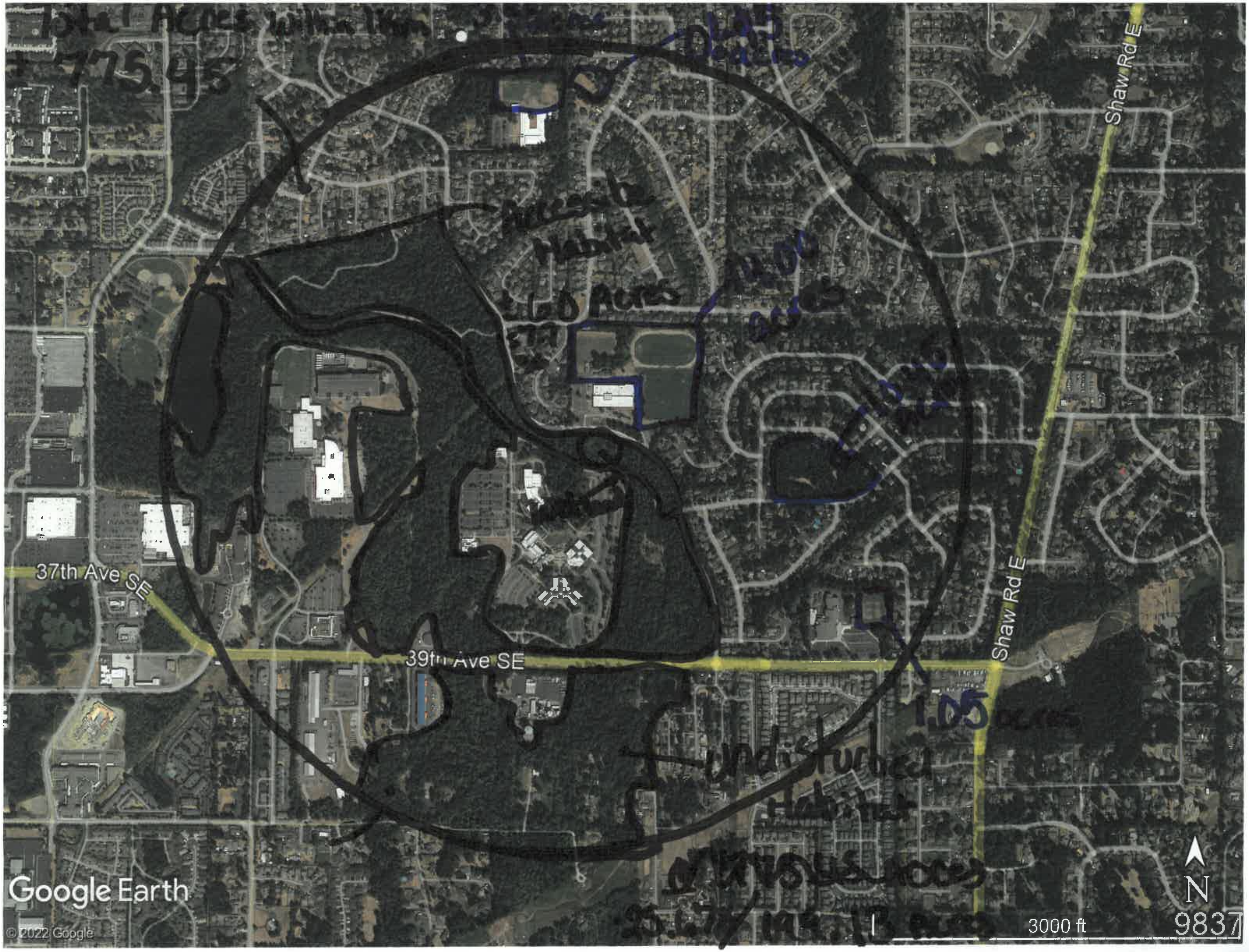
7th St PlSE
Wildwood Park Dr
Wildwood Park Dr
Wildwood Park Dr
150 ft Buffer
E.M.
S.S.
College Way
College Way
th Building (AAH)
S.S. = Scrub-Shrub
E.M. = Emergent
Google Earth
N
300 ft


Wetland Contains No outlet
Wildwood Park Dr
Seasonally Flooded
Seasonally Saturated
Wildwood Park Dr
College Way
Google Earth
200 ft
N

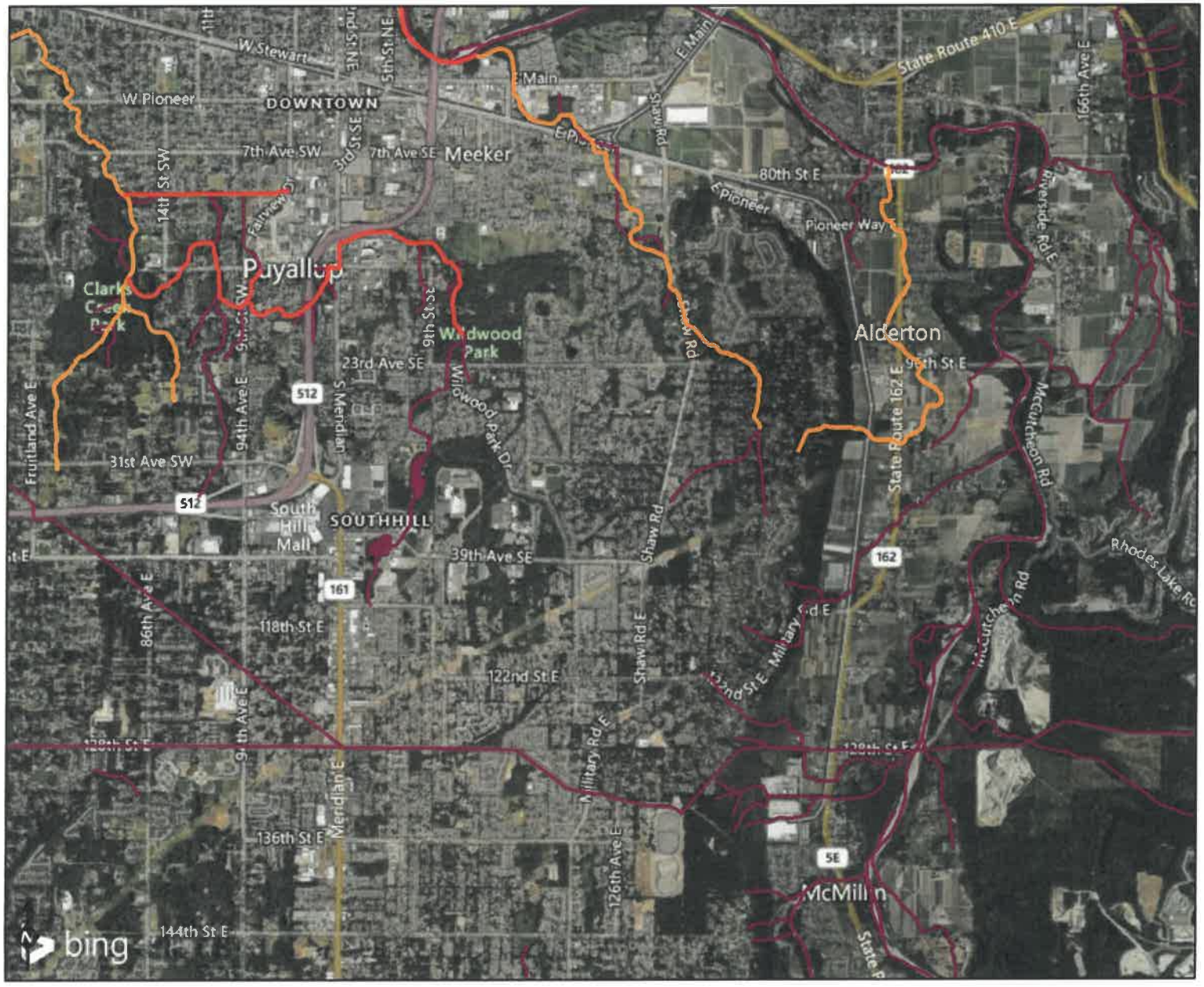

College Way
Wildwood Park Dr
Wildwood Park Dr
College Way
21st St SE
22nd St SE
Manorwood Dr
College Way
College Way
21st St SE
Wildwood Park Dr
39th Ave SE
39th Ave SE
39th Ave SE
N
1000 ft
Google Earth



775.95
Access to Habitat
1.60 Acres
10.00 acres
37th Ave SE
39th Ave SE
Shaw Rd E
Shaw Rd E
1.05 acres
undisturbed Habitat
Google Earth
© 2022 Google
3000 ft
N
9837

March 25, 2022

303(d) Vicinity Map



© 2022 Microsoft Corporation © 2022 Maxar ©CNES (2022) Distribution
Airbus DS © 2022 TomTom

Miles
0 0.5 1 2

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

Water Quality Standards
- All Standards

DEPARTMENT OF ECOLOGY
State of Washington

Figure 6a

DEPARTMENT OF ECOLOGY State of Washington

Pierce County

Water quality improvement projects

Select the waterbody or pollutant name to find more information about the specific project.

Waterbody Name(s)	Pollutant(s)	Status	Project Lead(s)
Clarks and Meeker Creeks	Dissolved Oxygen Sediment Fecal Coliform	EPA approved and Has an implementation plan	Donovan Gray 360-407-6407
Clover Creek	Dissolved Oxygen Fecal Coliform Temperature	Under development	Donovan Gray 360-407-6407
Commencement Bay	Dioxin	EPA approved	Donovan Gray 360-407-6407
Nisqually Watershed Tributaries Tributaries: • McAllister Creek • Ohop Creek • Red Salmon Creek • Lynch Creek • Wash Creek • Unnamed Tributary to West Red Salmon Creek • Little McAllister Creek • Medicine Creek mouth	Fecal Coliform Dissolved Oxygen	EPA approved and Has an implementation plan	Donovan Gray 360-407-6407
Puyallup River	Fecal Coliform	EPA approved and	Donovan Gray

Figure 7

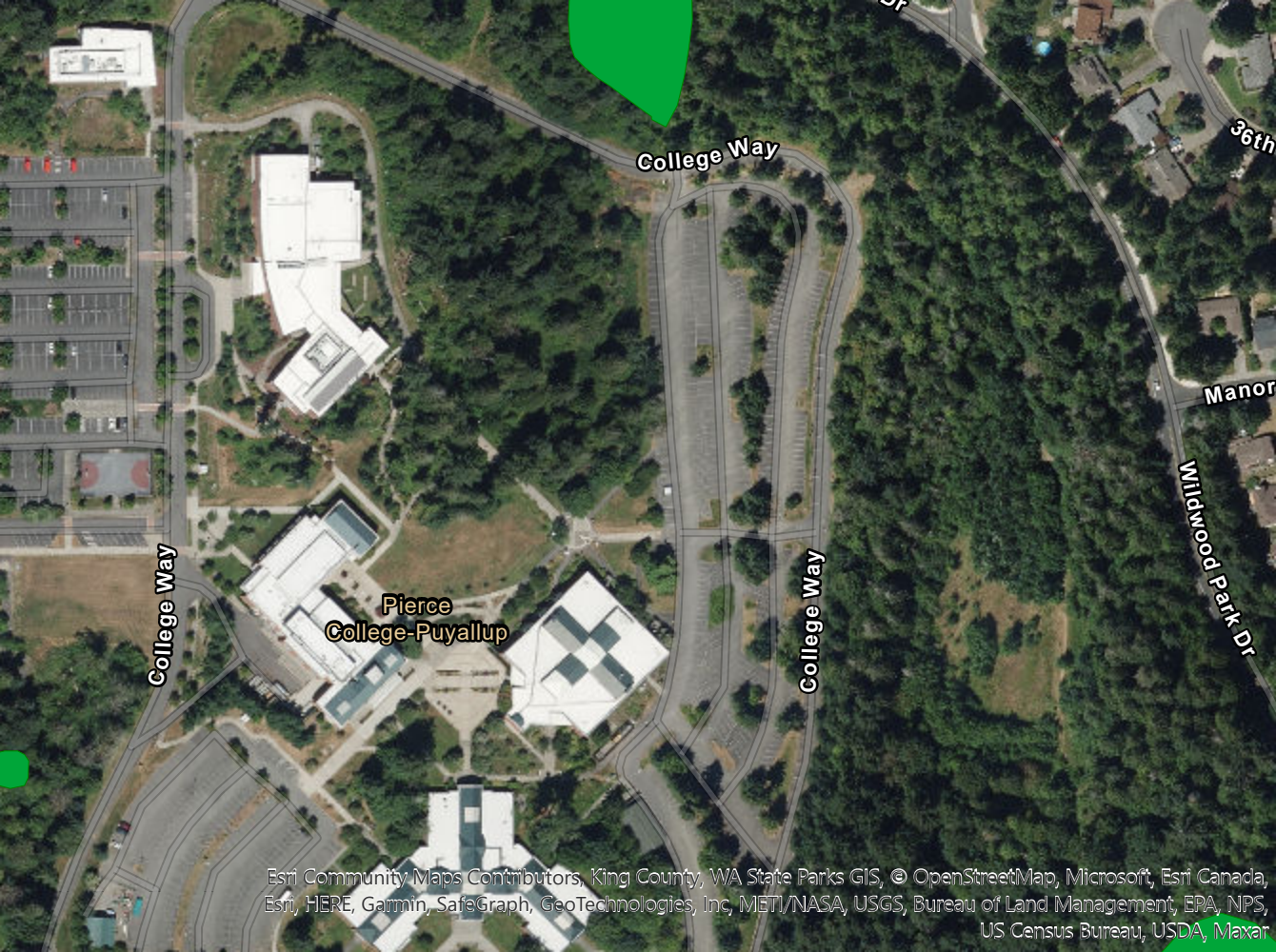
Watershed		Has implementation plan	360-407-6407
Puyallup River Watershed	Multi-parameter Ammonia-N BOD (5-day)	EPA approved	Donovan Gray 360-407-6407
Puyallup River: Upper White River	Sediment Temperature	EPA approved	Donovan Gray 360-407-6407
Puyallup River: Lower White River	pH	Under development	Donovan Gray 360-407-6407
South Prairie Creek	Fecal Coliform Temperature	EPA approved and Has an implementation plan	Donovan Gray 360-407-6407
Wapato Lake	Total Phosphorus	EPA approved	Donovan Gray 360-407-6407

To request ADA accommodation, call Ecology at 360-407-7668, 711 (relay service), or 877-833-6341 (TTY). More about our accessibility services.

PIERCE COLLEGE-PUYALLUP CAMPUS: STEM PROJECT

WETLAND ANALYSIS REPORT

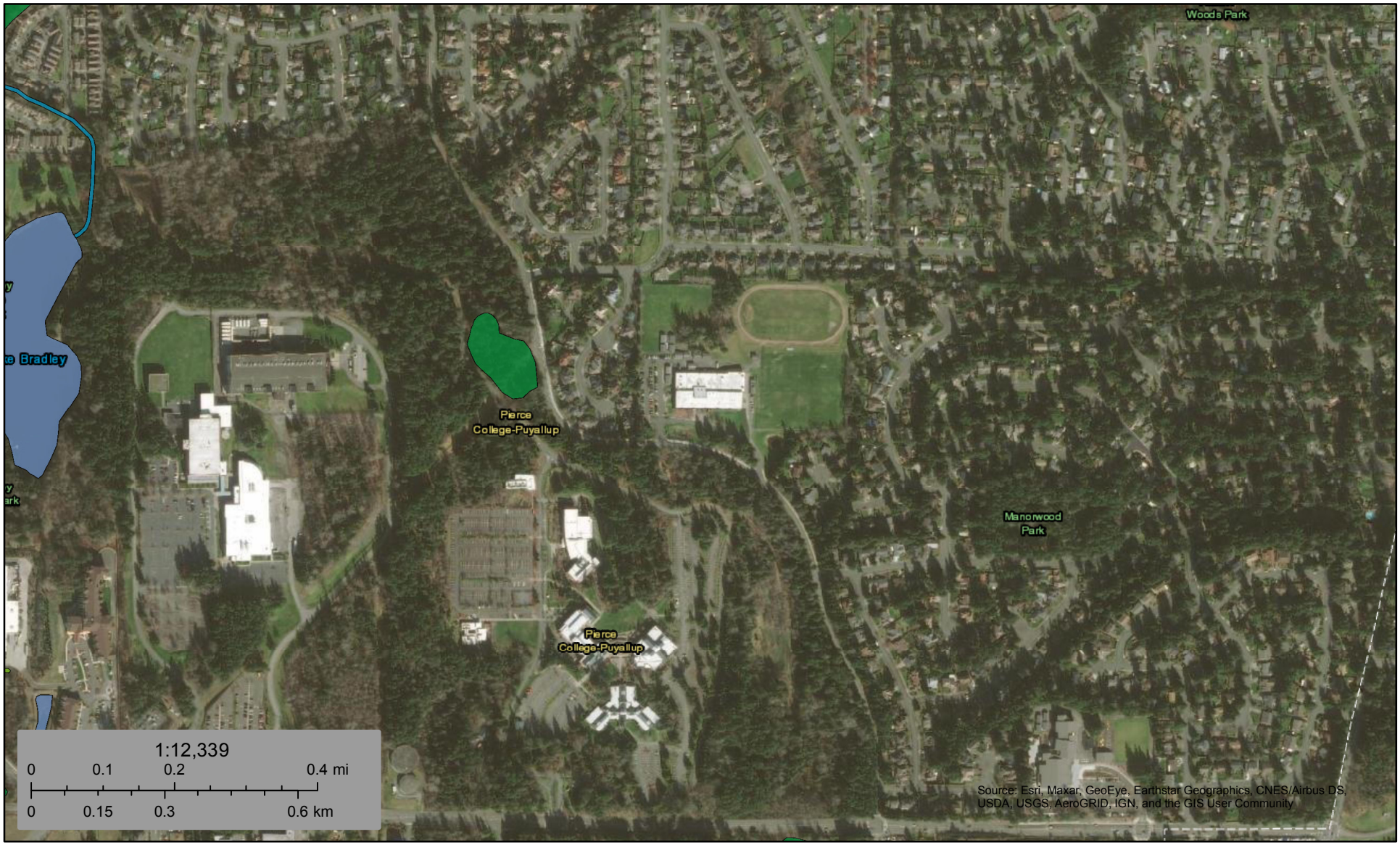
APPENDIX E: QUERIED DATABASE FIGURES


College Way
College Way
College Way
Pierce
College-Puyallup
Wildwood Park Dr
36th
Manor
Esri Community Maps Contributors, King County, WA State Parks GIS, © OpenStreetMap, Microsoft, Esri Canada, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, US Census Bureau, USDA, Maxar

U.S. Fish and Wildlife Service

National Wetlands Inventory

Puyallup College-STEM

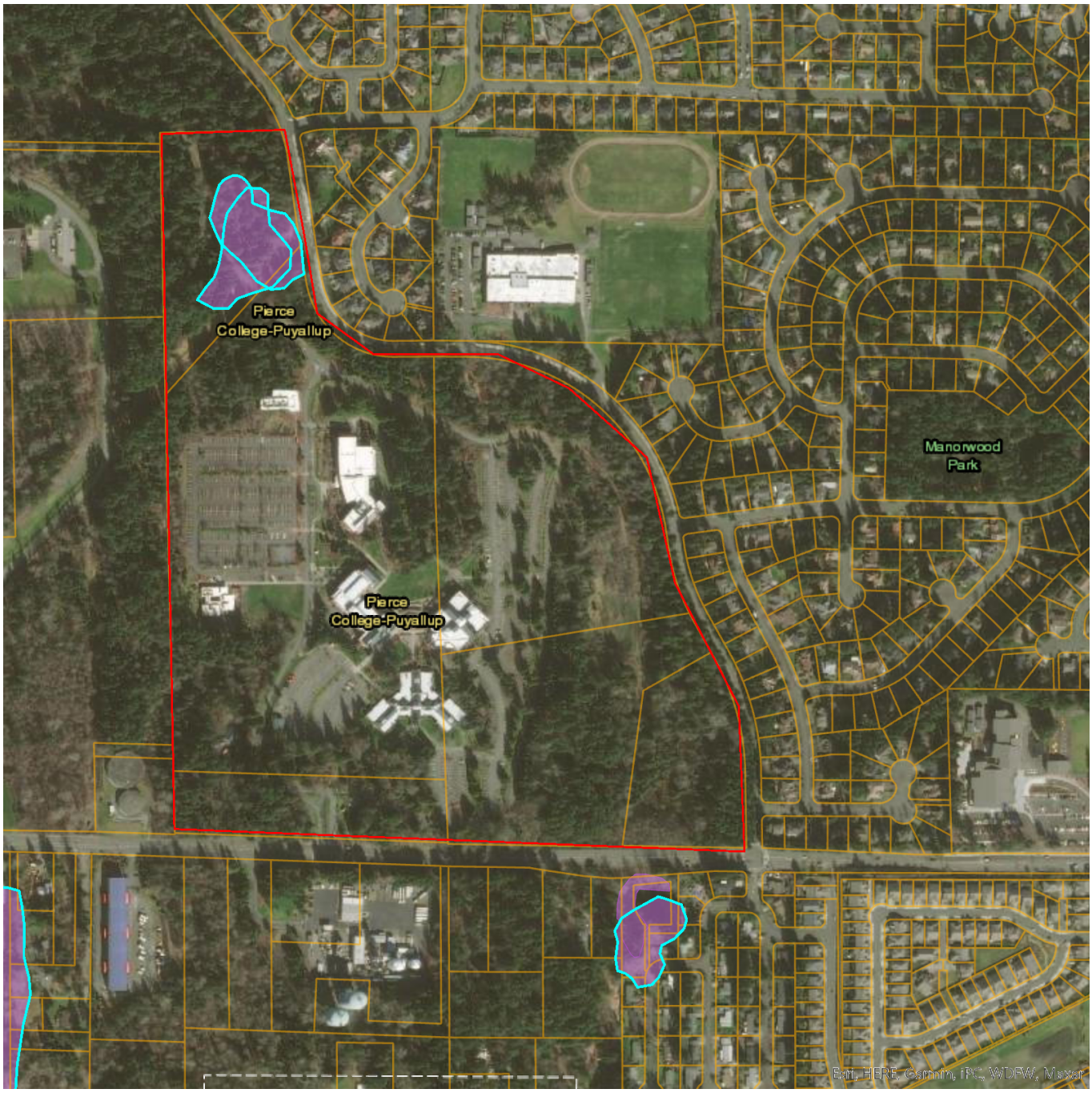


March 23, 2022

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

Priority Habitats and Species on the Web



Report Date: 01/26/2022

PHS Species/Habitats Overview:

Occurence Name	Federal Status	State Status	Sensitive Location
Wetlands	N/A	N/A	No
Waterfowl Concentrations	N/A	N/A	No
Freshwater Forested/Shrub Wetland	N/A	N/A	No

PHS Species/Habitats Details:

Wetlands	
Priority Area	Aquatic Habitat
Site Name	SOUTH PUYALLUP WETLANDS
Accuracy	1/4 mile (Quarter Section)
Notes	POTHOLE WETLANDS IN SOUTH PUYALLUP AREA
Source Record	902560
Source Dataset	PHSREGION
Source Name	NAUER, DON WDW
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html
Geometry Type	Polygons

Waterfowl Concentrations	
Priority Area	Regular Concentration
Site Name	PIERCE COUNTY - NON FARM
Accuracy	1/4 mile (Quarter Section)
Notes	SMALL WATERFOWL CONCENTRATION AREAS, NON AGRICULTURAL.
Source Record	902564
Source Dataset	PHSREGION
Source Name	NAUER, DON WDW
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	http://wdfw.wa.gov/publications/pub.php?id=00026
Geometry Type	Polygons

Freshwater Forested/Shrub Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Freshwater Forested/Shrub Wetland - NWI Code: PFO1C
Source Dataset	NWIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html
Geometry Type	Polygons

WA Wetlands of High Conservation Value

1/26/2022, 3:14:04 PM

Counties

1:9,028

0 0.05 0.1 0.2 mi

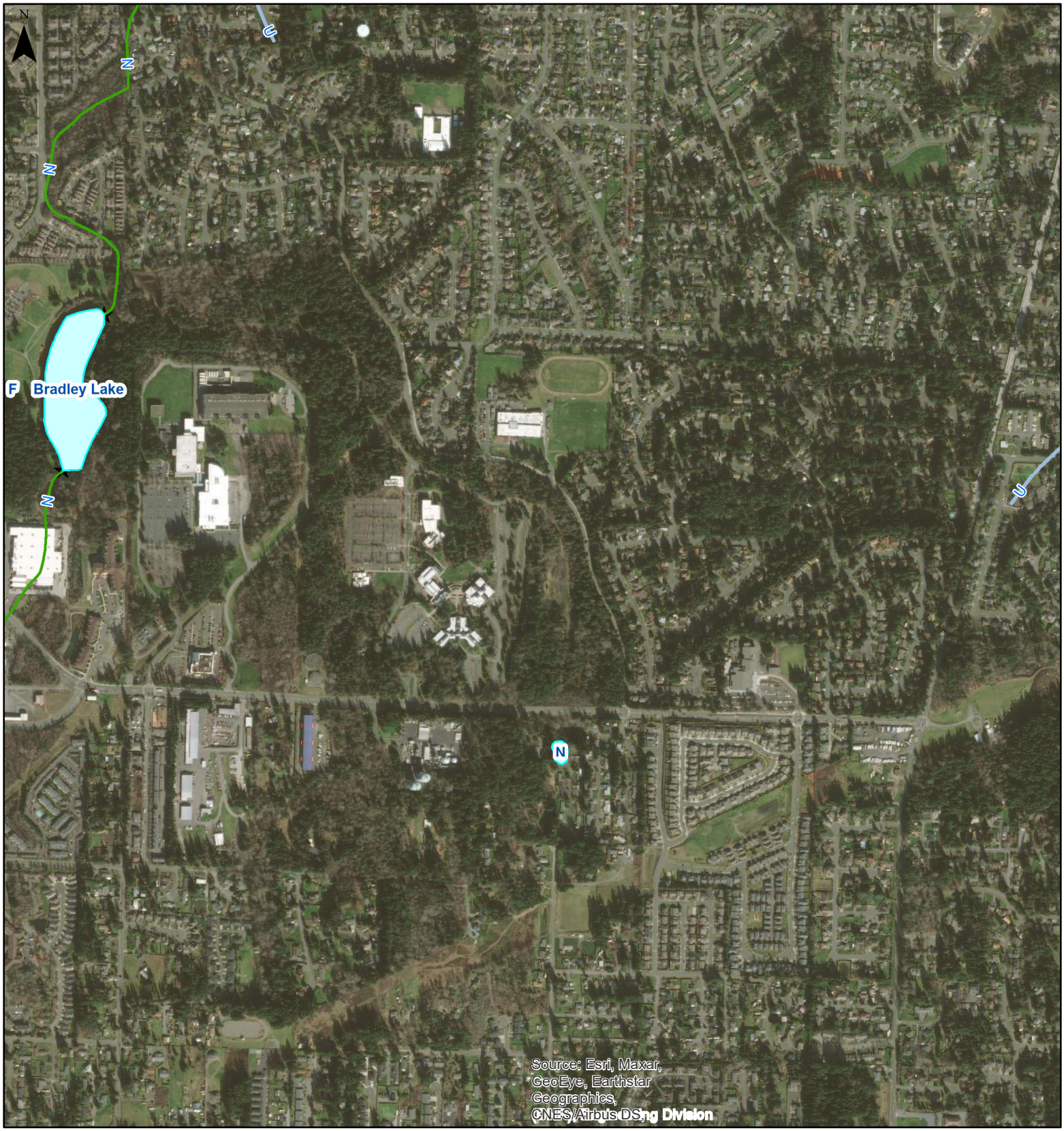
0 0.07 0.15 0.3 km

Maxar

Washington Natural Heritage Program

Washington State Department of Natural Resources | Washington Natural Heritage Program http://www.dnr.wa.gov/natural-heritage-program | Maxar |

Forest Practices Activity Map - Application #_____



Map Symbols		Additional Information	Legal Description
~~ Harvest Boundary	Landing		S10 T19.0N R04.0E, S03 T19.0N R04.0E
- - - Road Construction	Waste Area		S02 T19.0N R04.0E, S11 T19.0N R04.0E
Stream	Clumped WRTS/GRTS		
RMZ / WMZ Buffers	Existing Structure		
Rock Pit			

WASHINGTON STATE DEPARTMENT OF NATURAL RESOURCES

Extreme care was used during the compilation of this map to ensure its accuracy. However, due to changes in data and the need to rely on outside information, the Department of Natural Resources cannot accept responsibility for errors or omissions, and therefore, there are no warranties that accompany this material.

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Date: 1/26/2022 Time: 3:16:27 PM