PRELIMINARY CRITICAL AREAS STUDY FOR 5236 WEST MERCER WAY

Site Address / Tax Parcel Number:
5236 West Mercer Way, Mercer Island, WA 98040
192405-9324

Prepared For:
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Study Dated:
February 18, 2024

Study Prepared By:

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1. PROJECT OVERVIEW, SITE DESCRIPTION AND SUMMARY

This Critical Areas Study provides findings on a wetland and stream located on tax parcel number 192405-9324, on the west side of Mercer Island, Washington. This Critical Area Study was prepared to follow Mercer Island City Code (MICC) Section 19.07.110. A Critical Area Study on this site was previously prepared on 3/26/2017. I vaguely recall the original Study had been reviewed and approved by the City, and ultimately some clearing and grading had occurred for the site's driveway corridor, but construction on the home had not commenced.

This parcel (site) is vacant, 0.86 acres (37,350 square feet) in area, and now owned by Level Capital LLC. Per historic aerial photos, some clearing and grading for the driveway occurred following the year 2021. In 2021, the site was fully vegetated as shown by aerial photos. The new property owner is interested in finishing construction of the driveway and building a home on this site. The driveway connects to West Mercer Way on the north side of the site. The site is located east of West Mercer Way, in the NW Quarter of Section 19, Township 24 North, Range 5 East, W.M.

Directions to the site from Mercer Island City Hall are below. The Vicinity Map shows the route and parking area:

1) From Mercer Island City Hall offices, drive west on SE 36th Street. It will become Gallagher Hill Road.
2) Turn right onto SE 40th Street and drive for 0.38 miles.
3) Turn left onto Island Crest Way and drive for 0.78 miles.
4) Turn right onto SE 46th Street and drive for 0.2 miles.
5) Turn left (south) onto West Mercer Way and drive for 0.6 miles. Watch for house number 5230 on the left and park on the shoulder on the southbound side (west) of the road.
6) Walk across West Mercer Way. The site is a forested area just south of addressed #5230 house.

The surrounding community of the site is composed of moderately dense single-family residential development. The site is part of Water Resource Inventory (WRIA) 8 which constitutes the Cedar and Sammamish River drainages. The site is part of the Mercer Island Drainage Basin which is simply that all water on Mercer Island drains to Lake Washington which is hydrologically connected to the Puget Sound via Montlake Cut, Portage Bay, Lake Union, and Salmon Bay (an opening into Puget Sound).

The site lies within an approximate 1-2-acre forested ravine surrounded by homes and West Mercer Way. A seasonal stream flows fairly steeply from east to west through the south end of the ravine and a portion of the stream is located onsite. Most of the stream channel is located on the adjacent property to the south. The ravine has a slight western aspect with 20-30% slopes and is covered in a mixed coniferous – deciduous forest.

Nearly 7 years ago, two wetland biologists Chris Holcomb, MES, and I, visited the site on March 18, 2017 to perform an investigation for wetlands. A wetland was found, and it was delineated. Additionally, the stream's north ordinary high water marks were estimated and demarcated with flags. We concluded that a wetland, named *Wetland W*, is located on the south-central and west portion of the site and that it extends a short distance offsite to the south. *Wetland W* was a Category IV slope wetland that receives water from the stream and from a few seeps on its north end. The north boundary of *Wetland W* was marked with 15 blue / white striped mylar flags. Three Sample Points (SPs) were established inside and outside *Wetland W* to justify the basis for the wetland delineation. The wetland buffer width was 35 feet. Mercer Island City Code (MICC) denotes streams as 'watercourses' and the stream was considered to be a Type 3 watercourse. The ordinary high water mark (OHWM) of the stream was marked with 28 blue flags.

Per prior MICC 19.070 B, stream buffer widths were dependent upon the stream type. In this case, the stream also had a 35-foot wide buffer. Since the wetland boundary was closer to the proposed development area than the stream, and the stream and wetland buffer widths were the same, the 35-foot wetland buffer was the critical boundary in 2017.

Typically, a City will allow wetland delineations to be valid for up to five years. After that, it is typically required for a wetland to be re-evaluated. Since more than five years has passed since the above work occurred, the wetland has been re-evaluated.

In November 2023, Holcomb and Rigos re-evaluated and re-delineated the wetland. This time, there were 17 wetland flags (S-1 through S-17) and two sample point flags were hung. Again, the wetland was scored and again it was determined to be a Category IV wetland, however during the past seven years, MICC had been amdended with respect to wetland scoring criteria. A Category IV wetland in MICC is now a 40-foot wide wetland buffer. The wetland buffer increased by five feet from nearly seven years ago. Two new sample point flags were provided and are included in the Appendix.

There were no new stream OHWM flags hung for the stream's north side, because the stream seemed to be in the same location as what had been previously demarcated nearly seven years ago. The stream (watercourse) is now determined to be a Type Ns (which stands for no fish / no fish habitat, and a seasonal flow). Under new MICC Section 19.07.180.C, the stream buffer increased quite a bit by 25 feet, from 35 feet to 60 feet. However, the north wetland boundary is almost entirely more than 20 feet north from the stream's north OHWM, thus the 40-foot wetland buffer is the critical boundary in 2024.

2. METHODOLOGY, AUTHORITY AND LIMITATIONS

A. Methodology

This wetland delineation was performed using the Routine Level 2 Methodology as described in the Washington State Wetlands Identification and Delineation Manual (Washington State Department of Ecology, March 1997). This Delineation Manual is an appropriate technical basis for determining the presence of wetlands. The Routine Level 2 Methodology is used when there is insufficient information already available to characterize the vegetation, soils and hydrology of the project area. The wetland determination was based on the presence of the three criteria for jurisdictional wetlands; hydrophytic vegetation, hydric soils and wetland hydrology. All three criteria must be present in order to classify an area as a wetland.

B. Authority

This wetland determination is in accordance with Section 404 of the Clean Water Act, the objective of which is to "maintain and restore the chemical, physical and biological integrity of the waters of the United States" (COE, 1987).

C. Limitations

Wetlands are subject to seasonal and annual variation. Wetland determinations and delineations are not final until approved by regulatory agencies and/or jurisdictions.

3. WETLAND DEFINITION / METHODS

A wetland is defined as an area that is 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. As stated from the Corps of Engineers Wetlands Delineation Manual (COE, 1987), wetlands are required to have the following three criteria:

A. The site supports predominately hydrophytic (wetland) vegetation.

Dominant vegetation is determined using the 50/20 rule as described in the 1997 Washington State Wetlands Identification and Delineation Manual. Hydrophytic vegetation have adaptations that allow these species to survive in saturated and/or inundated environments. Hydrophytic vegetation exists at a site if greater than 50% of dominant species are classified as FAC, FAC+, FACW, FACW+ or OBL. The indicator status of wetland plants is classified according to the USFWS National Wetlands Inventory and National Plant List Panel (Reed, 1988). Less common indicators of hydrologic vegetation include visual observation of plant species growing in areas of prolonged inundation and/or soil saturation, morphological adaptations, technical literature, physiological adaptations and reproductive adaptations. As shown in the table below, an indicator status is applied to each species according to its probability of occurring in wetlands.

Table 1: Wetland Plant Indicator Table

Indicator Category	Symbol	Occurrence in Wetlands
Obligate Wetland Plants	OBL	>99%
Facultative Wetland Plants	FACW	67-99%
Facultative Plants	FAC	34-67%
Facultative Upland Plants	FACU	1-33%
Obligate Upland Plants	UPL	<1%

Note: FACW, FAC, and FACU have + and - values to represent species near the wetter end of the spectrum (+) and the drier end of the spectrum (-).

B. The substrate is predominantly undrained hydric soil.

Hydric soils (soils formed under wetland conditions) are a positive indicator of wetland conditions. Hydric soil is defined as a soil "that in its undrained condition, is saturated, flooded or ponded long enough during the growing season to develop anaerobic conditions in the upper part." (NRCS, 1985). A preliminary determination of hydric soils for a site is made with reference to Natural Resource Conservation Service (NRCS) soil surveys (per county) and criteria established by The National Technical Committee for Hydric Soils (NTCHS). Hydric soil criteria are based on taxonomy, drainage and permeability. However, NRCS mapping units cover broad geographical areas and commonly don't include smaller inclusions of non-hydric or hydric soils. Therefore, field confirmation is necessary. Field indicators of hydric soils are examined from 18" soil pits. For non-sandy soils, indicators include presence of organic soils (Histosols), histic epipedons, sulfidic material (hydrogen sulfide), aquic or peraquic moisture regime, reducing soil conditions, hydric soil colors, verified soils appearing on the NTCHS hydric soils list and presence of iron and manganese concretions. Hydric soil colors are analyzed immediately below the A-horizon or to a depth of 10" (whichever is shallower). Hydric soils include gleyed (gray) soils, low chroma soils in an unmottled matrix or soils with high chroma mottles within a low chroma matrix. Mottles (redoxymorphic features) are spots of contrasting color. Gleyed color and chroma are determined by using the Munsell Color Charts (Munsell Color, 1992). Hydric soil indicators for non-sandy soils include high organic matter content in the surface horizon, streaking of subsurface horizons by organic matter and/or spodic horizons.

C. Substrate is saturated by water or covered by shallow water at least periodically during growing season.

Typically, wetland hydrology occurs where the presence of water has an overriding influence on vegetation and soils, resulting in the development of wetland soils and wetland plant communities. Sites with wetland hydrology are periodically inundated and/or saturated during at least part of the growing season. Wetland hydrology normally exists where topography directs water into low relief areas dominated by soils with poor drainage characteristics. Areas demonstrate wetland hydrology if soils are periodically inundated or saturated to the surface for a sufficient duration during the growing season. "Sufficient duration" is considered to be greater than 12.5% of growing season days that are consecutively seasonally inundated and / or saturated to the surface. If the areas are inundated or saturated between 5-12.5% of the growing season, then they may or may not be wetlands. The growing season can either be defined by the number of frost-free days, or the period during which the soil temperature at 19.7 inches is above biological zero (41 degrees F). As a rule of thumb, the mesic growing season for Western Washington lowlands extends 245 days from March 1 to October 31 (Ecology, 1997). At each sample location, primary wetland hydrology indicators such as inundation, saturation in the upper 12", water marks, drift lines, sediment deposits and drainage patterns are noted. Secondary indicators such as oxidized root channels, water-stained leaves, local survey data, FAC-neutral test, etc. are also considered in the determination of a positive indicator for wetland hydrology.

In order to assess wetland functions and values, we rated the wetland using the Washington Department of Ecology Wetland Rating Forms for Western Washington (Ecology, 2004, updated 2008; Publication Number #04-06-025) which was applied since this version of the rating form is required under MICC 19.16.010.

4. HYDROPHYTIC VEGETATION RESULTS

Prevalent vegetation is characterized by dominant species comprising a plant community. Dominant species are those that contribute more to the character of a plant community than other species present, as estimated or measured in terms of some ecological parameter.

The site is mostly undeveloped and covered in many larger trees and a relatively open understory. Western hemlock (FACU), big leaf maple (FACU), and red alder (FAC) comprise the tree cover over the non-wetland areas. English ivy (FACU) is dominant throughout the understory and probably reduces cover by native species. Other shrubs include Indian plum (FACU), salmonberry (FAC), English laurel (FACU), Oregon grape (FACU) and snowberry (FACU). Closer to the stream, two different Cowardin vegetation classes characterize *Wetland W*. The west and central portions are dominated by red alder, black cottonwood (FAC), salmonberry, Indian plum, English ivy and lady fern (FACW). An east portion of the wetland is characterized by an emergent plant community. This area had silty, saturated soils and was covered by sawbeak sedge (FACW), stinging nettle (FAC), giant horsetail (FAC) and a water cress species (OBL). For additional information, see the Wetland Data Forms in the Appendix.

5. HYDRIC SOILS RESULTS

Per the NRCS online Web Soil Survey (NRCS, 2016), two soil types cover the site. *Alderwood gravelly sandy loam 8-15% slopes* (AcG) covers the west half. This soil type developed from glacial outwash. The site's east portion is covered in *Alderwood and Kitsap soils, very steep* (AkF). This soil type developed on glacial moraines and till plains. Both soil types are moderately well drained and feature water tables that are generally 18 to 37 inches below the surface. Neither of these soil *types* is hydric but field investigations are required to determine if hydric soils occupy small areas.

During the site investigations, the soils throughout the site feature a variety of colors and textures. Much of the non-wetland area features sandy silt loams that have chroma 2 colors or higher without redoximorphic features. Darker chroma 1 colors characterized much of *Wetland W*. A chroma 1 color in the upper 12 inches of soil is a 'dark surface horizon' which is a hydric soil indicator. For additional soils information, see the Wetland Data Forms.

6. WETLAND HYDROLOGY RESULTS

A wetland can receive water from many possible sources such as precipitation, upslope surface flow runoff from precipitation, seeping shallow interflow, rising groundwater from below, tidal influences, overbank stream flooding, etc. Wetland hydrology indicators may include drainage patterns, drift lines, sediment deposition, watermarks, stream gage data, flood predictions, historic records, and visual observation of saturated soils and inundation. The 1987 manual requires inundation, flooding or saturation to the surface for at least 5 - 12.5% of the growing season to satisfy the hydrology requirements for jurisdictional wetlands (COE, 1987). Hydrological indicators include primary indicators such as saturation in the upper 12 inches or inundation on the surface and secondary indicators such as water stained leaves and the FAC-neutral test. One primary indicator or two secondary indicators are required for an area to meet the wetland hydrology criteria.

Water in the stream channel flows westerly down the bottom of the ravine and enters a roadside drainage ditch on West Mercer Way. A seasonal stream that originates east of the site comprises much of this water. Water also emerges from a few seeps north of the stream. These seeps saturate the soils downslope from the seeps and this water tends to sheet flow into the stream or enter via shallow concentrated flow. A substantial seep located on the east side of the site forms a small seasonal pool. Those are some of the positive indicators of wetland hydrology. For additional hydrology information, please see the Wetland Data Forms.

7. WETLAND AND STREAM DETERMINATION

A. Background

King County (KC) iMap's wetland and stream layer does not show wetlands and streams onsite, and often times does not show critical areas in incorporated cities such as Mercer Island. Regardless, it's understood that KC iMap is incomplete and cannot be relied upon. The NRCS Soil Map in the Appendix indicates the site does not have hydric soils. However, fieldwork demonstrated the site contains a small wetland.

B. Wetland W

Wetland W is a slope wetland, according to the hydrogeomorphic system of wetland classification. According to the Cowardin system (Cowardin et. al 1979), it could be considered a *palustrine forested wetland with seasonal saturation and a stream*. By applying the *Washington Department of Ecology Wetland Rating System for Western Washington*, it was determined that *Wetland W* is a Category IV wetland. It scored 6 points for improving water quality functions, 5 points for hydrologic functions and 4 points for habitat functions for a total score of 15 points. A total functions score between 9 -15 points is considered a Category IV wetland.

C. Watercourse

The seasonal stream enters the site from the south and east and flows westerly near the site's south property line. Generally, the stream is 18 inches wide and 4 inches deep, although there are a few braided channels in the corridor. Once offsite, the stream enters a south-sloping roadside drainage ditch on the east side of West Mercer Way that eventually connects with other tributaries as it makes its way west and ultimately discharges into Lake Washington. Lake Washington is a "water of the state" that contains fish, however the stream segment onsite and roadside drainage ditch lack fish and fish habitat due to steep gradients and hanging culverts. Fish are unable to access the onsite stream. The stream has seasonal flow, not permanent flow. Because of these characteristics, the stream is a Type Ns watercourse.

D. Wetland and Stream Buffers

Wetlands have buffers so that their habitat, water quality and hydrologic functions can be protected. Vegetation should be preserved in buffers, and construction is not permitted within them without City approval and/or a permit. Buffers extend from the delineated edges of the wetland. The wetland category, as determined from the rating process, determines the wetland buffer width. A Category IV wetland is required to have a 40-foot wide buffer.

Per MICC, a stream buffer width is dependent on the stream type. A stream buffer extends from the stream's ordinary high water mark (OHWM) from both edges. A Type Ns watercourse, such as the unnamed stream onsite, is required to have a 60-foot wide stream buffer. Since the stream's north OHWM is in general located more than 20 feet south of the wetland boundary, the wetland buffer is more encumbering to the site and project. As a result, the wetland buffer is more constraining than the stream buffer.

E. Buffer Alterations

Buffers can be altered to accommodate development by either buffer reduction or through a buffer averaging approach. Both wetland and stream buffers can be reduced to widths as low as 25 feet with an approved mitigation plan. MICC stipulates that mitigation steps within the wetland and watercourse buffers include but are not limited to, installing bio-infiltration swales or ponds to retain runoff, incorporating porous materials on driveways, incorporating 'green roofs' on buildings, and replacing invasive non-native vegetation with native vegetation. MICC stipulates that buffers can be averaged by reducing the buffer width in one area but expanding it in others so the overall area of the buffer remains the same. The averaged buffer should be enhanced with native vegetation and buffers cannot be reduced to less than 25 feet per MICC.

8. HABITAT, MITIGATION AND NATIVE VEGETATION CONSERVATION STRATEGY

Wetlands provide many important primary functions. They improve water quality, as soils and leafy emergents act to filter and bind water-borne pollutants. Second, they accommodate water holding and flood storage functions by slowly releasing stormwater runoff to streams and rivers, thereby reducing the extent of downstream erosion and flooding. Third, they add wildlife habitat for a large number of invertebrate, plant and animal species. Fourth, they provide benefits to nearby human residents to allow for enjoying of wildlife and vegetation.

Through mitigation, there are opportunities to improve the ecological conditions of the wetland buffer. Non-native invasive species cover the site and can be replaced with native species. English ivy is particularly dominant but there are also patches of English laurel and individual Himalayan blackberry plants growing throughout the site. English ivy should be eliminated from trees by simply cutting the roots at the trunk. Shade tolerant shrubs can replace invasive plants. Appropriate replacement plants may include salmonberry, snowberry, red elderberry, salal, Oregon grape, Indian plumb and trailing blackberry. Some of the shrubs that are removed for the home or driveway

construction can be re-planted or placed within the buffer as downed woody debris or installed as snags; this would provide habitat for woodpeckers and other wildlife.

Once the new location of the wetland flags are surveyed and mapped, then the new wetland and stream buffers can be overlaid with the new Site Plan, then an Updated Wetland Mitigation Plan can be designed and the MICC Mitigation criteria will be addressed in a Final Critical Area Study.

9. REFERENCES

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APPENDIX

Figure 1: Wetland Sketch

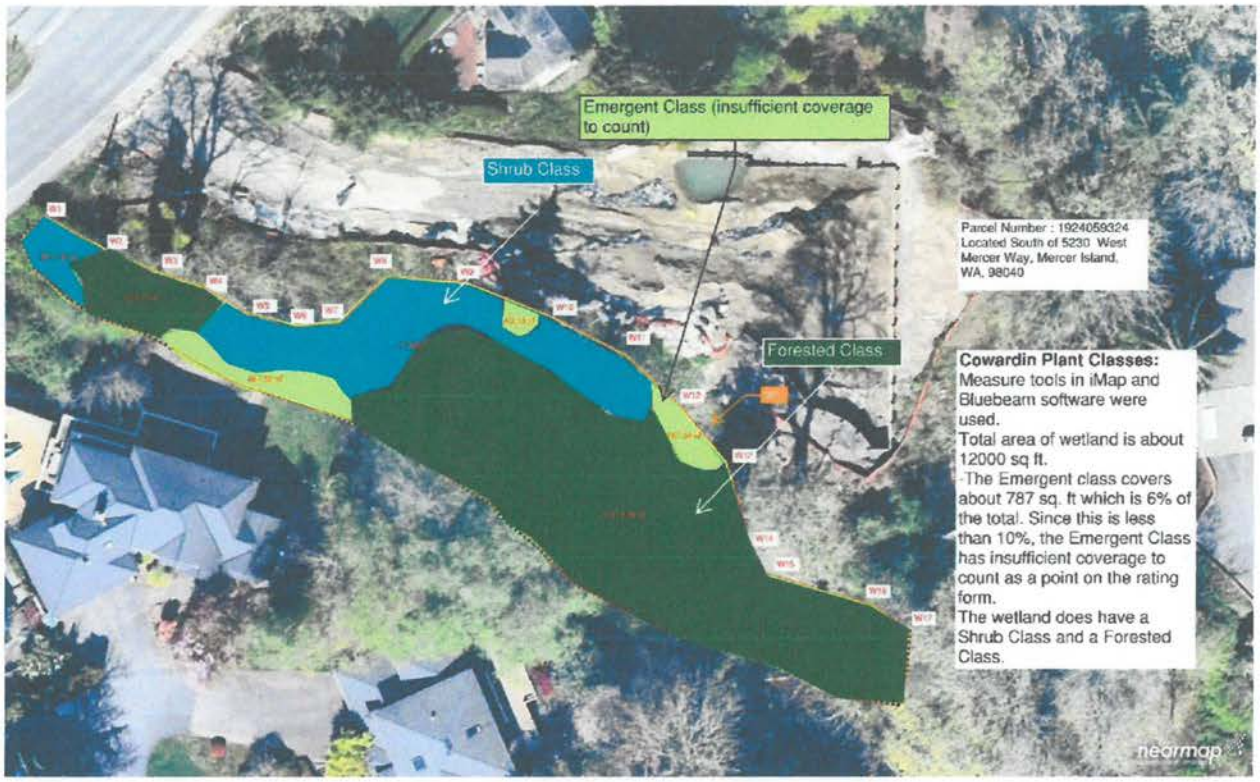


Figure 2: Cowardin Plant Classes

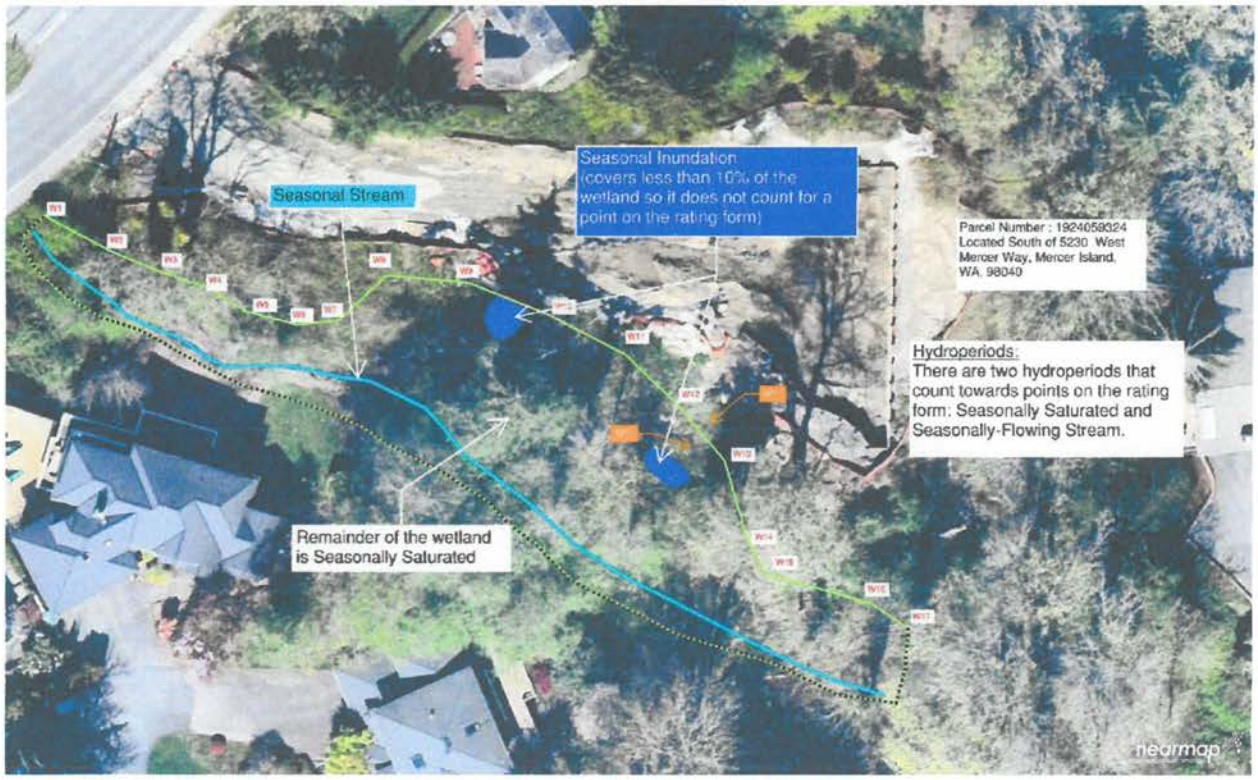


Figure 3: Hydroperiods

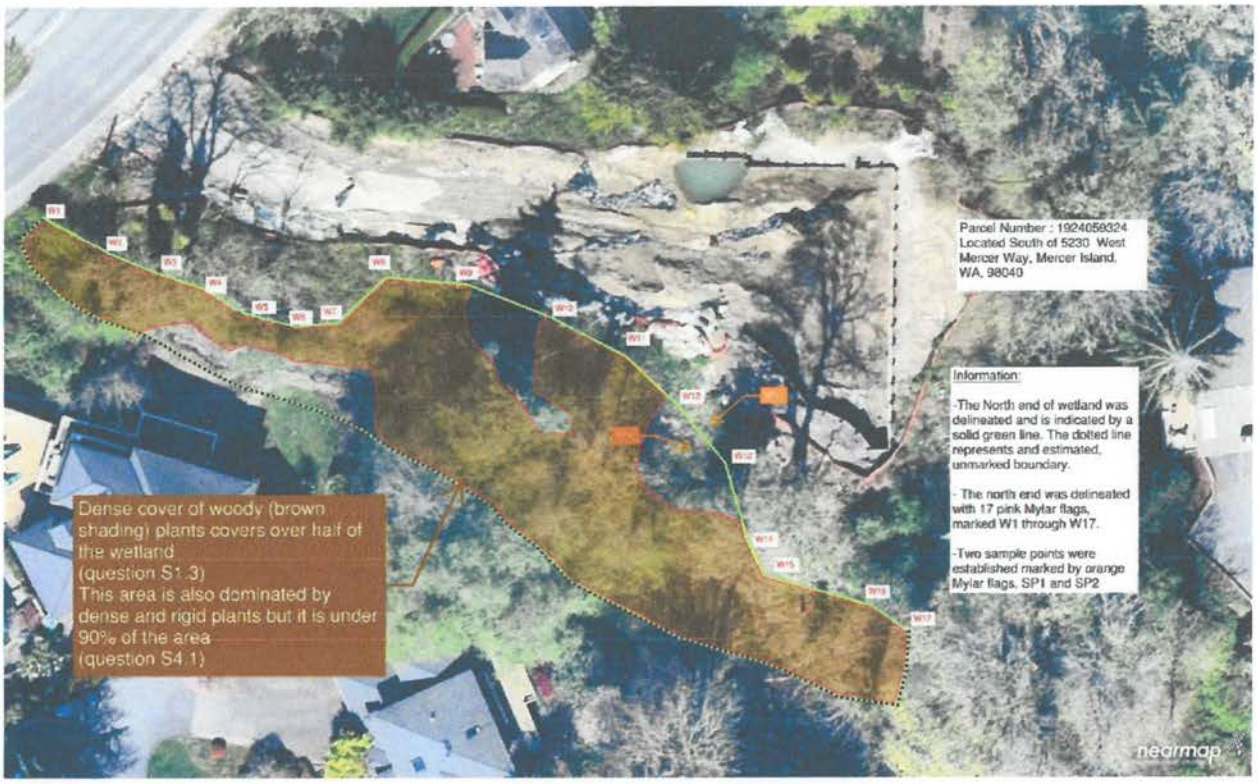


Figure 4: Plant Density and Cover of Rigid Plants

Figure 5: Pollution Sources within 150 feet of wetland

December 6, 2023

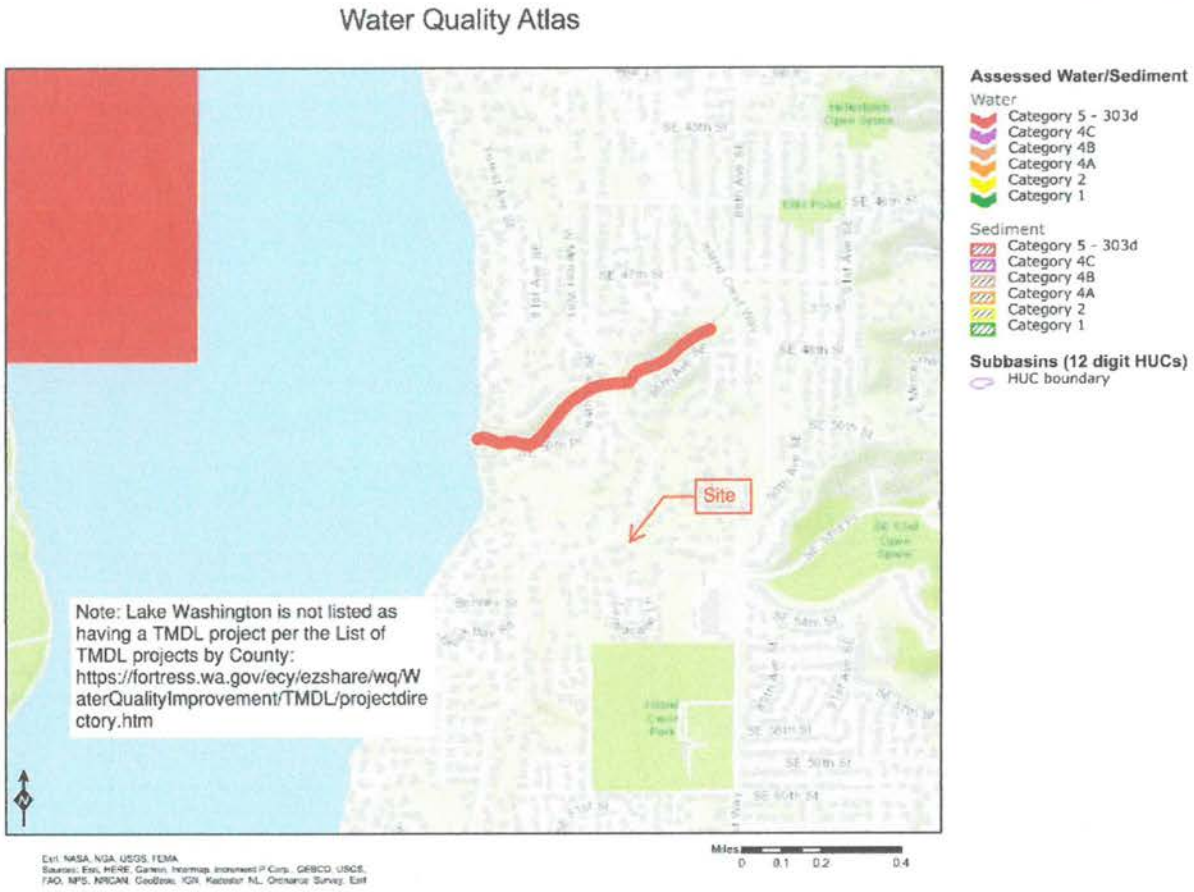


Figure 6: 303 (d) Waters near wetland

Figure 7: Habitat Quality within 1km of wetland

Figure 8: Vicinity Map

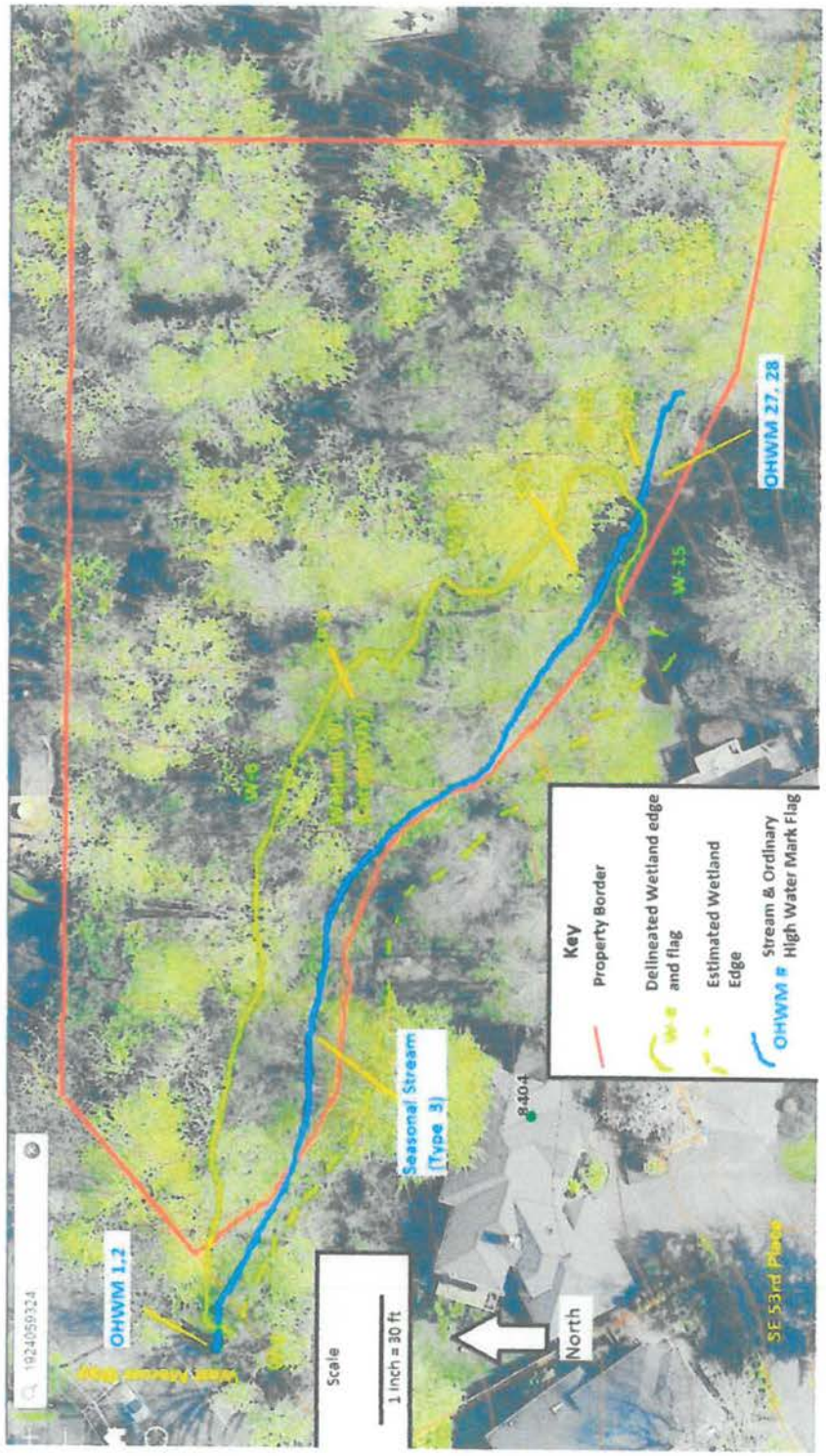


Figure 9. Aerial Photo

Figure 12. Landscape Aerial Photo

Soil Map—King County Area, Washington

Map Unit Legend

King County Area, Washington (WA633)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
AgC	Alderwood gravelly sandy loam, 8 to 15 percent slopes	1.3	55.3%
AkF	Alderwood and Kitsap soils, very steep	1.0	44.7%
Totals for Area of Interest		2.3	100.0%

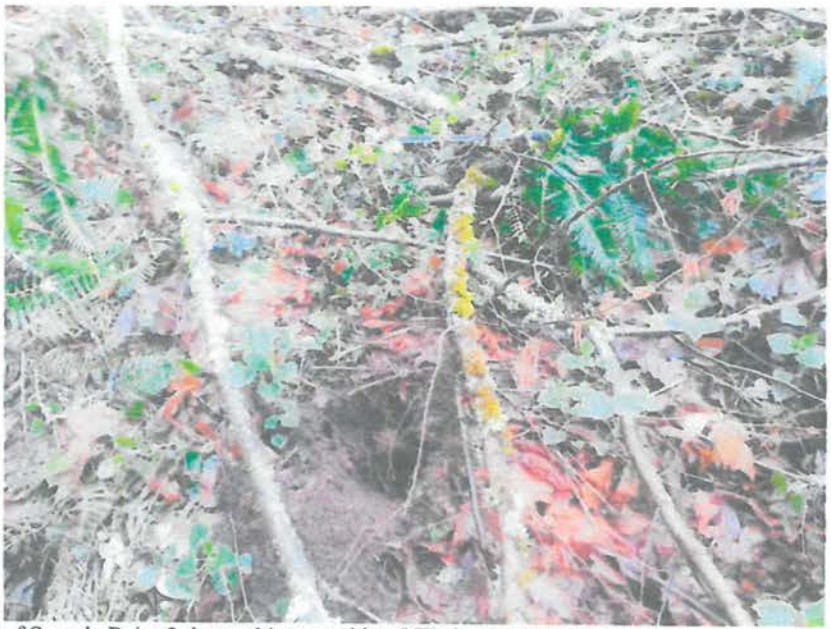
Figure 11 NRCS Soil Type Map

PRIOR PHOTOS

Figure 12: Project Photos

Picture 1: View of the western end of *Wetland W*. The onsite stream is in the upper left and the lawn is part of the property directly south of the site.

Picture 2: View of Sample Point 1, located within the east end of *Wetland W*. The photo was taken in mid-March and various emergent plants were sprouting including sawbeak sedge and giant horsetail.



Picture 3: View of Sample Point 2, located just outside of *Wetland W*. This area had some hydrophytic plants such as stinging nettle but the plant community was not hydrophytic. Additionally, the soils had chroma 2 colors without redoximorphic features and were therefore not hydric and wetland hydrology was not present.

Picture 4: View of Sample Point 3, located on the central part of the site and within *Wetland W*. This area featured a hydrophytic plant community (lady fern had was dead and had not emerged at the time of the photo and red alder is not visible in this picture). The area also featured soils with chroma 1 colors that were saturated to the surface.

FIGURE 13

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

Project/Site: Tax Parcel # 1924059324 City/County: Mercer Island / King Sampling Date: 11/17/2023

Applicant/Owner: Capital State: WA Sampling Point: SP-1

Investigator(s): Mark Rigos Section, Township, Range: 19, 24 North, 5 East

Landform (hillslope, terrace, etc.): mild slope above small stream Local relief (concave, convex, none): none Slope (%): 3%

Subregion (LRR): A Lat: 47.55531 Long: -122.22492 Datum: WGS 84

Soil Map Unit Name: Alderwood and Kitsap soils, very steep (AkF) NWI classification: NA

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:

Area had mildly hydrophytic vegetation but was not wetland due to soils and hydrology.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 10 sq ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 10 sq. ft.)			
1. Rubus Armeniacus	10	Yes	FAC
2.			
3.			
4.			
5.			
	10 = Total Cover		
Herb Stratum (Plot size: _____)			
1. Equesetum telmateia	40	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	40 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1. Hedera helix	40	Yes	FACU
2.			
	40 = Total Cover		

% Bare Ground in Herb Stratum _____

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 67% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ✔ No _____

Remarks:

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)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 3/2	100					SaL	
8-18	10YR 4/8	100					SaL	

[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 Soil 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 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 ✔ 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:

FIGURE 13

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

Project/Site: Tax Parcel # 192405-9324 City/County: Mercer Island / King Sampling Date: 11/17/2023

Applicant/Owner: Capital State: WA Sampling Point: SP-2

Investigator(s): Mark Rigos Section, Township, Range: 19, 24 North, 5 East

Landform (hillslope, terrace, etc.): mild slope above small stream Local relief (concave, convex, none): none Slope (%): 3%

Subregion (LRR): A Lat: 47.55526 Long: -122.22496 Datum: WGS 84

Soil Map Unit Name: Alderwood and Kitsap soils, very steep (AkF) NWI classification: NA

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 is approximately 10' south and downslope from SP1 and within the wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 10 sq ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 10 sq. ft.)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: _____)			
1. Equesetum telmateia	50	Yes	FACW
2. Urtica dioica	10	Yes	FAC
3. Athyrium filix-femina	30	Yes	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	90 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1. Hedera helix	10	Yes	FACU
2.			
	10 = 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	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ✔ No _____

Remarks:

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)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-13	7.5 YR 2.5/1	100					SiCl	
13-18	Gley 1 5/2	96	10YR 4/6	4	C	M	SaL	

[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 Soil 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 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 ___ Depth (inches): ___

Water Table Present? Yes ✔ No ___ Depth (inches): 8

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

Wetland Hydrology Present? Yes ✔ No ___

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

Remarks:

FIGURE 14

Wetland name or number W

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland W on parcel 1924059324 Date of site visit: 11/2023

Rated by Mark Rigos, PE Trained by Ecology? X Yes ___No Date of training_____

HGM Class used for rating Slope Wetland has multiple HGM classes? ___Y X N

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

Source of base aerial photo/map King Co. iMap, Connect Explorer, WA Dept. Ecology Water Quality Atlas

OVERALL WETLAND CATEGORY IV (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

X **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	6			5			4			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	

Wetland name or number W

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

Riverine Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Ponded depressions	R 1.1	
Boundary of area within 150 ft of the wetland *(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 total habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	R 3.2, R 3.3	

Lake Fringe Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	L 1.1, L 4.1, H 1.1, H 1.4	
Plant cover of trees, shrubs, and herbaceous plants	L 1.2	
Boundary of area within 150 ft of the wetland *(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 total habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	L 3.1, L 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	L 3.3	

Slope Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Plant cover of **dense** trees, shrubs, and herbaceous plants	S 1.3	
Plant cover of **dense, rigid** trees, shrubs, and herbaceous plants *(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 total habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	S 3.3	

Wetland name or number W

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?
   X The wetland is on a slope (slope can be very gradual),
   X 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,
   X The water leaves the wetland **without being impounded**.

   NO – go to 5 **YES** – The wetland class is **Slope**

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

Wetland name or number W

5. Does the entire wetland unit **meet all** of the following criteria?
   ____The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river,
   ____The overbank flooding occurs at least once every 2 years.

   NO – go to 6 **YES** – The wetland class is **Riverine**
   NOTE: The Riverine unit can contain depressions that are filled with water when the river is not flooding

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

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

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

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

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

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

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

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

Wetland name or number W

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	1
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	3
Total for S 1 — Add the points in the boxes above	4

Rating of Site Potential If score is: __12 = H ___6-11 = M X 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	1
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	1

Rating of Landscape Potential If score is: X 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	1
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	2

Rating of Value If score is: X 2-4 = H ___1 = M ___0 = L *Record the rating on the first page*

Wetland name or number W

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	0

Rating of Site Potential If score is: __1 = M X__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	1

Rating of Landscape Potential If score is: X1 = 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	1
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	1

Rating of Value If score is: __2-4 = H X_1 = M ___0 = L *Record the rating on the first page*

NOTES and FIELD OBSERVATIONS:

Wetland name or number W

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
____Emergent	3 structures: points = 2
__X__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:

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

1

H 1.2. Hydroperiods

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

____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	
__X__Intermittently or 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.

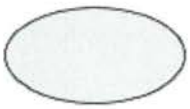
Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. **Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canada thistle**

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

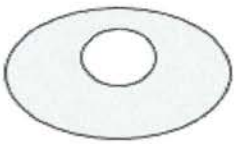
1

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

1

Wetland name or number W

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). X 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) ___ 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	6

Rating of Site Potential If score is: __**15-18 = H** ___**7-14 = M** X **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___ + [(% moderate and low intensity land uses)/2]___ = _____% 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 2% + (0/2)= 2%	0
H 2.2. Total habitat in 1 km Polygon around the wetland. *Calculate:* % relatively undisturbed habitat___ + [(% moderate and low intensity land uses)/2]___ = _____% 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 17.5% + (9%/2)= 22%	1
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	-2
Total for H 2 — Add the points in the boxes above	-1

Rating of Landscape Potential If score is: __**4-6 = H** ___**1-3 = M** X **< 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	1

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

Wetland name or number W

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

— **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

X — **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.

X — **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

Washington State University

To all to whom these presents shall have come: Greeting.

Be it known that we, the President and Faculty of the University
under authority of the Board of Regents and the laws of the State of Washington, have admitted

Mark Joseph Rigos

to the degree of

Bachelor of Science
in Biology

with all the Rights, Privileges, and Dignities to that degree appertaining.

Given at Pullman in the State of Washington, on the Tenth day of May in the Year One Thousand Nine Hundred and Ninety-seven of the Republic the Two Hundred and Twenty-first, and the State of Washington the One Hundred and Eighth.

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Samuel H. Smith
President of the University

John W. Ellis
President of the Board of Regents

FIGURE 15

Richard Chinn Environmental Training, Inc.

certifies that

Mark J. Rigos

has successfully completed a

38 Hour Army Corps of Engineers Wetland Delineation & Management Training Program

Issued Certificate No. 982 and 2.8 CEUs on this fifteenth day of April, 1999 in SEattle, Washington

Richard Chinn, CET

Richard Chinn Environmental Training, Inc.
PO Box 10776, Pompano Beach, FL 33061-6776
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This training has been based in part on the U. S. Army Corps of Engineers Wetlands Delineation Manual Technical Report Y-87-1 (1987 manual), as provided for in the training materials developed in conjunction with Section 307(e) of the Water Resources Development Act of 1990 for the Wetland Delineator Certification Program.

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