Wetland and Stream Delineation Report New Madrona K-8 Project City of Edmonds, Washington

May 18, 2016

SHANNON & WILSON, INC.

GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

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WETLAND AND STREAM DELINEATION REPORT NEW MADRONA K-8 PROJECT CITY OF EDMONDS, WASHINGTON

1.0 INTRODUCTION

Shannon & Wilson, Inc. (Shannon & Wilson) was contracted by the City of Edmonds School District (District) No. 15 to conduct a wetland and stream delineation for the New Madrona K-8 Project, located in Edmonds, Washington (Figure 1). The District plans to construct a new Madrona K-8 school on the south side of the approximately 40-acre property, located at 9300 236th Street SW (Snohomish County tax parcel 27033600404600). The project is located within Section 36 of Township 27 N, Range 4 E, Willamette Meridian.

The wetland and stream delineation is intended to assist the District and design team in the site selection and conceptual design process. The scope of services for our wetland and stream delineation was limited to the following tasks:

- Conduct a background review of information relating to the site.
- Complete a wetland delineation on project site.
- Estimate approximate wetland boundaries within 200 feet of the property boundary.
- Delineate the ordinary high water mark (OHWM) of onsite streams.
- Categorize wetlands using the 2014 Washington State Wetland Rating System for Western Washington.¹
- Complete a wetland delineation report describing our findings including categories and standard buffer widths.

2.0 SITE DESCRIPTION

The approximately 40-acre property is dissected by two steeply sloped wooded areas running in north-south alignments; one is a ravine located along the eastern property boundary and the other is a forested incline located near the middle of the property. The existing Madrona Elementary School is located in the northeast corner of the property and the former Woodway Elementary School is located in the opposite southwest corner of the property. Recreational areas including a track and baseball field, and soccer fields are located in the southeast and northwest corners of the property. The areas surrounding the property consist primarily of residential development.

¹ The original scope also included wetland categorization under the 2004 *Washington State Wetland Rating System for Western Washington*, but a subsequent City critical areas regulations update rendered those forms obsolete and they are not included in this final report.

The property is well used by local residents for recreation. During our site visits, we observed many people walking dogs in trail systems located throughout the sloped wooded areas as well, as many joggers on the track.

A series of catch basin grates were observed along the inside of the track. The survey performed for the property shows that these storm drains, along with storm drain from the existing Madrona Elementary School, discharge to the top of the steep wooded slope in the middle of the property. The survey also identifies storm drain discharges to the top of the wooded ravine located on the eastern property boundary.

3.0 METHODS

Shannon & Wilson conducted the wetland delineation fieldwork on July 6 and 7, 2015. Potential wetlands were identified using methods described in the *Corps Wetlands Delineation Manual* (U.S. Army Corps of Engineers [Corps] Waterways Experiment Station, 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (Corps Engineer Research and Development Center, 2010).

Potential wetland areas were determined using the triple-parameter approach, which considers vegetation types, soil conditions, and hydrologic conditions. For an area to be considered wetland, it must display each of the following: (a) dominant plant species that are considered hydrophytic by the accepted classification indicators, (b) soils that are considered hydric under federal definition, and (c) indications of wetland hydrology, in accordance with the federal definition. Appendix A provides a detailed description of methodology used.

Typically, the OHWM of streams are delineated following the guidance within Ecology's technical report *Determining the Ordinary High Water Mark on Streams in Washington State* (Ecology, 2010). However, no onsite streams were observed; therefore, no OHWM delineations occurred.

Identified wetlands were delineated by using pink "wetland boundary" flagging and pink pin flags. Data point locations were marked with orange flagging and orange pin flags.

4.0 DOCUMENT REVIEW

Prior to conducting fieldwork, we reviewed the following background information:

- U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Web Soil Survey interactive mapping system
- U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) Wetlands Mapper interactive mapping system
- Washington Department of Fish and Wildlife (WDFW) SalmonScape mapping system
- WDFW PHS on the Web interactive mapping system

The NRCS web soil survey identifies the site soils as Alderwood gravelly, sandy loam; 15 to 30 percent slopes; Alderwood-Urban land complex; 2 to 8 percent slopes; and 8 to 15 percent slopes (USDA, 2015). These soil series are identified as non-hydric, however they may contain areas of hydric inclusions.

Neither the NWI map, the WDFW SalmonScape application, nor the WDFW PHS on the Web application identify streams, wetlands, or other fish and wildlife habitat conservation areas on the property (USFWS, 2015 and WDFW, 2015 and 2016).

5.0 WETLAND DELINEATION

Three wetlands (identified as Wetland A, B, and C) were delineated in the project area (Figure 2). Descriptions of the wetland and adjoining uplands follow. Vegetation is described below by common name, with the scientific name and indicator status in parentheses for the first use. Soils are described with the associated Munsell® Color Charts color. Wetlands were characterized according to the updated 2014 version of the "Washington State Wetland Rating System for Western Washington" (Ecology, 2014) as required by the City, Corps, and Ecology (see Appendix B for Wetland Determination Data Forms and Appendix C for Wetland Rating Forms).

5.1 Wetland A

Wetland A (approximately 0.02 acre) was delineated on the wooded slope located in the middle of the property, downgradient from storm drain outfalls identified on the survey. A trail system on the slope allows human and pet access to the wetland. Wetland A is classified as a palustrine scrub-shrub wetland according to the Cowardin classification and is a slope wetland according to hydrogeomorphic classification.

Dominant vegetation in Wetland A includes a shrub strata of salmonberry (*Rubus spectabilis*, FAC), English laurel (*Prunus laurocerasus*, NI), mountain ash (*Sorbus sitchensis*, FAC), as well as an emergent strata of lady fern (*Athyrium cyclosorum*, FAC) (see Appendix B, Data Sheet DP-7).

Soil in Wetland A is generally characterized by a surface horizon of black (10YR 2/1) loam extending to 5 inches below ground surface (bgs), underlain by a grayish brown (10YR 5/2) sand with dark yellowish brown (10YR 4/6) redoximorphic concentrations in the matrix. Soil observed in Wetland A meets the *depleted below dark surface* (A11) and *depleted matrix* (F3) hydric soil indicators.

During the site visit, seeps were observed throughout Wetland A. Hydrology in Wetland A is likely supported by a combination of storm drain discharges from the upgradient storm drain outfalls and groundwater. Water in the data pit was observed at 11.5 inches bgs and the soil was saturated to the surface.

Wetland A was rated according to Ecology's 2014 wetland rating manual (Ecology, 2014). Wetland A is rated as a Category IV wetland (Appendix C).

5.2 Wetland B

Wetland B (approximately 0.4 acre) was delineated within the wooded ravine located on the eastern property boundary. A network of walking paths run adjacent to and through parts of the wetland. Wetland B is classified as a palustrine forested wetland according to the Cowardin classification and as a depressional wetland according to the hydrogeomorphic classification.

Dominant vegetation in Wetland B includes a forested strata of western red cedar (*Thuja plicata*, FAC) and red alder (*Alnus rubra*, FAC), as well as an emergent strata of slough sedge (*Carex obnupta*, OBL), yellow-flag iris (*Iris pseudocorus*, OBL), and reed canarygrass (*Phalaris arundinacea*, FACW) (see Appendix B, Data Sheet DP-3).

Soil in Wetland B is generally characterized by a black (10YR 2/1) silt loam extending to 4 inches bgs underlain by a very dark gray (10YR 3/1) silt loam with gray (10YR 6/1) depletions and dark yellowish brown (10YR 4/6) and grayish brown (10YR 5/2) redoximorphic concentrations extending to 17 inches bgs, underlain by a very dark gray (10YR 3/1) silt loam extending to 18 inches bgs, underlain by a very dark gray (10YR 3/1) silt loam with gray (10YR 6/1) depletions and dark yellowish brown (10YR 4/6) and grayish brown (10YR 5/2) redoximorphic concentrations extending to at least 20 inches bgs. The redoximorphic and depletions observed in the soil below 4 inches bgs appeared blocky and mixed up within the

matrix suggesting that the soil may have been disturbed in the past. Soils observed in Wetland B meet the *redox dark surface* (F6) hydric soil indicator.

Wetland B is located downgradient of the storm drain outlets associated with the existing Madrona Elementary School and the play fields. Drainage patterns were observed upgradient of Wetland B in the ravine. While these areas showed indication of past surface water flow, they were not dominated by hydric vegetation and did not meet wetland hydric soil indicators. Hydrology in Wetland B is likely predominantly supported by surface flow from the surrounding ravine, the storm drain inputs from the school, and a seasonally high groundwater table.

Wetland B was rated according to Ecology's 2014 wetland rating manual (Ecology, 2014). Wetland B is rated as a Category III wetland (Appendix C).

5.3 Wetland C

Wetland C (approximately 0.1 acre) was delineated south of Wetland A along the wooded slope located in the middle of the property, downgradient from the storm drain discharges identified on the survey. A trail system on the slope allows human and pet access to the wetland. Wetland C is classified as a palustrine emergent wetland according to the Cowardin classification and as a slope wetland according to hydrogeomorphic classification.

Dominant vegetation in Wetland C includes a shrub strata of western red cedar, an emergent strata of lady fern, and creeping nightshade (*Solanum dulcamara*, FAC) (see Appendix B, Data Sheet DP-6).

Soil in Wetland C is generally characterized by a black (10YR 2/1) loam, underlain by a grayish brown (10YR 5/2), gravelly, loamy sand with dark yellowish brown (10YR 4/4) redoximorphic concentrations in the matrix extending to at least 14 inches bgs. Soils observed in Wetland C meet the *depleted below dark surface* (A11) and the *depleted matrix* (F3) hydric soil indicators.

During the site visit, seeps were observed throughout Wetland C. Hydrology in Wetland C is likely predominantly supported by a combination of the upgradient storm drain discharges and groundwater. Soil in the data pit was saturated to the surface.

Wetland C was rated according to Ecology's 2014 wetland rating manual (Ecology, 2014). Wetland C is rated as a Category IV wetland (Appendix C).

5.4 Uplands

Uplands observed on the project site consist predominantly of developed school structures and recreational facilities as well as portions of the wooded slope and. The play fields are dominated by a variety of grasses, dandelion (*Taraxacum officinale*, facultative upland [FACU]), hairy cat's ear (*Hypochaeris radicata*, FACU), and clover (*Trifolium repens*, facultative [FAC]). The wooded areas are dominated by western red cedar, Douglas-fir (*Pseudotsuga menziesii*, FACU), hemlock (*Tsuga heterophylla*, FACU), red elderberry (*Sambucus racemosa*, FACU), holly (*Ilex aquifolium*, FACU), English laurel, sword fern (*Polystichum munitum*, FACU), and English ivy (*Hedera helix*, FACU) (see Appendix B, Data Sheets DP-1, DP-2, DP-4, and DP-5).

Upland soils on the property generally consisted of a surface horizon comprised of dark yellowish brown (10YR 3/4) to black (5YR 2.5/1) loam in the upper 2 to 5 inches bgs, underlain by dark yellowish brown (10YR 3/4 and 4/4) to light olive brown (2.5Y 5/3) loamy sand to silt loam extending to at least 16 inches bgs. In areas closer to the wetland boundaries, redoximorphic concentrations were observed below 5 inches. However, the soil profiles in these areas do not meet wetland hydric soil indicators. No saturation was observed in the upland soils although surface drainage patterns were observed in the ravine and below storm drain outfalls on the western slope.

6.0 REGULATIONS

Several local, state, and federal regulations apply to development proposals in and/or near wetlands and streams. A summary of applicable regulatory implications is given below.

6.1 Federal Regulations

The Corps' review process under Section 404 of the Clean Water Act (CWA) is required for projects involving discharges of dredges or fill materials into waters of the United States, including non-isolated wetlands and streams. We did not observe a hydrologic surface connection between the onsite wetlands and a Water of the U.S. Therefore, the Corps may consider the onsite wetlands to be isolated and not subject to the CWA. However, this determination would need to be made by the Corps through a "Jurisdictional Determination."

If the Corps takes jurisdiction over the site wetlands, impacts to the wetlands would require compensatory wetland mitigation. The Corps, in cooperation with Ecology, has developed guidance for conducting wetland mitigation in western Washington (Ecology and others, 2006). For unavoidable impacts to Category III and Category IV wetlands, the Corps and Ecology

recommend the on-site and in-kind permittee-responsible mitigation ratios shown in Table 1 based on area (area of mitigation: area of wetland impact.)

Wetland Category	Reestablishment or Creation	Rehabilitation	Reestablishment or Creation (R/C) and Rehabilitation (RH)	Reestablishment or Creation (R/C) and Enhancement (E)	Enhancement Only
III	2:1	4:1	1:1 R/C and 2:1 RH	1:1 R/C and 4:1 E	8:1
IV	1.5:1	3:1	1:1 R/C and 1:1 RH	1:1 R/C and 2:1 E	6:1

 TABLE 1

 WETLAND IMPACT COMPENSATORY MITIGATION RATIOS

6.2 State Regulations

Ecology has been authorized to implement Section 401 of the CWA for Water Quality Certification in Washington for most projects that require Corps permits under CWA Section 404. Typically, projects requiring a CWA Section 404 permit also require a CWA Section 401 Water Quality Certification. If the onsite wetlands are determined to be isolated, the project would not require a Section 401 Water Quality Certification.

The purpose of the 401 certification process is to ensure that federally permitted or federally funded activities comply with the federal CWA, state water quality laws, and any other applicable state laws. Some general requirements for Section 401, if it is required, include pollution spill prevention and response measures, disposal of excavated or dredged material in upland areas, use of fill material that does not compromise water quality, clear identification of construction boundaries, and provision for site access to the permitting agency for inspection.

If the Corps does not take jurisdiction over the onsite wetlands under the CWA, Ecology still has regulatory authority to protect isolated wetlands under the State Water Pollution Control Act (Chapter 90.48 Revised Code of Washington). Ecology would perform an administrative review of the project and would issue an Administrative Order for unavoidable impacts to isolated wetlands.

6.3 City of Edmonds (City)

6.3.1 Wetlands Regulations

The City regulates wetlands and wetland buffers under Chapter 23.50 of the Edmonds Community Development Code (ECDC) (City, 2016).²

Based on our field observations and using the 2014 *Wetland Rating System for Western Washington*, Wetlands A and C are Category IV wetlands and Wetland B is a Category III wetland (Appendix C). The City requires a 60-foot standard buffer around Category III wetlands and a 40-foot standard buffer around Category IV wetlands, with implementation of the following minimization measures when applicable (Table 2 and Figure 2) (ECDC 23.50.040(F)(1-2)).

Disturbance	Required Measures to Minimize Impacts					
Lights	Direct lights away from wetland.					
Noise	 Locate activity that generates noise away from wetland. If warranted, enhance existing buffer with native vegetation plantings adjacent to noise source immediately adjacent to the outer wetland buffer. 					
Toxic runoff	 Route all new, untreated runoff away from wetland while ensuring wetland is not dewatered. Establish covenants limiting use of pesticides within 150 feet of wetlands. Apply integrated pest management. 					
Stormwater runoff	 Retrofit stormwater detention and treatment for roads and existing adjacent development. Prevent channelized flow from lawns that directly enters the buffer. Use Low Impact Development (LID) techniques (per Puget Sound Action Team publication on LID techniques). 					
Change in water regime	Infiltrate or treat, detain, and disperse into buffer new runoff from impervious surfaces and new lawns.					
Pets and human disturbance	 Use privacy fencing OR plant dense vegetation to delineate buffer edge and to discourage disturbance using vegetation appropriate for the ecoregion. Place wetland and its buffer in a separate tract or protect with a conservation easement. 					
Dust	Use best management practices to control dust.					
Disruption of corridors or connections	Maintain connections to offsite areas that are undisturbed.Restore corridors or connections to offsite habitats by replanting.					

 TABLE 2

 REQUIRED MEASURES TO MINMINIZE IMPACTS (ECDC 23.50.040(F)(2))

² The Edmonds City Council adopted revisions to these regulations in May 2016, so all code references below are taken from the track changes version of the code provided in the Council's agenda packet. Accordingly, there remain some typographical errors in that version with respect to section numbering.

In accordance with ECDC 23.50.040(F)(2), the City may require increased buffer widths on a case-by-case basis when a larger buffer is necessary to protect wetland functions and values. The City bases this determination on the following criteria:

- A larger buffer is needed to protect other critical areas;
- The buffer or adjacent uplands has a slope greater than 15 percent or is susceptible to erosion and standard erosion control measures will not prevent adverse impacts to the wetland;
- The buffer area has minimal vegetative cover. In lieu of increasing the buffer width where existing buffer vegetation is inadequate to protect the wetland functions and values, development and implementation of a wetland buffer enhancement plan may substitute.
- The wetland and/or buffer is occupied by a federally listed threatened or endangered species, a bald eagle nest, a great blue heron rookery, or a species of local importance; and it is determined by the director that an increased buffer width is necessary to protect the species.

ECDC 23.50.040(G) allows for buffer reduction only when existing buffer vegetation is inadequate; the buffers of the existing wetlands are primarily densely vegetated with a mix of native tree and shrub species so this provision may not be applicable. Based on our understanding of the current development proposal, there may be some small areas of existing buffer that are lawn and ballfields that would be impacted.

Under ECDC 23.50(G)(3), the City allows for buffer averaging with buffer enhancement if the following requirements are met:

- The buffer averaging and enhancement plan provides evidence that wetland functions and values will be:
 - Increased or retained through plan implementation for those wetlands where existing buffer vegetation is generally intact; or
 - Increased through plan implantation for those wetlands where existing buffer vegetation is inadequate to protect the functions and values of the wetland.
- The wetland contains variations in sensitivity due to existing physical characteristics or the character of the buffer varies in slope, soils, or vegetation, and the wetland would benefit from a wider buffer in places and would not be adversely impacted by a narrower buffer in other places;
- The total area contained in the buffer area, or the total buffer area existing on a subject parcel for wetlands extending off-site, after averaging is no less than that which would be contained within a standard buffer; and

• The buffer width at any single location is not reduced by more than twenty-five percent (25%) of the standard o buffer width.

However, wetland buffer averaging that also modifies the erosion hazard area and/or its buffer would not be allowed by the ECDC without a geotechnical analysis and demonstration that the wetland buffer averaging and erosion or landslide hazard area buffer modification would not adversely impact the wetlands.

Wetland buffer reduction through buffer enhancement may also be allowed if buffer averaging is not feasible on site (ECDC 23.50.040(G)(4)).

ECDC 23.50.040(G)(8) describes potential permitted uses within wetland buffers, including conservation and restoration activities, passive recreation (such as trails), and stormwater management facilities. The proposed development of a new school and fire access road are not allowed uses within wetland buffers. If buffer averaging or reduction with enhancement is not sufficient to address the need for placement of structures, then a variance and additional buffer mitigation would be required.

6.3.2 Other Critical Areas

The City regulates critical areas including wetlands (addressed in Section 6.3.1), fish and wildlife habitat conservation areas, geologically hazardous areas, critical aquifer recharge areas, frequently flooded areas, and shorelines under ECDC Title 23 Natural Resources. Fish and wildlife habitat conservation areas include streams, state priority habitats and areas associated with state priority species, and federally designated threatened or endangered species, among others. The site investigation and document reviews did not identify any streams or other fish and wildlife habitat conservation areas on site or within 225 feet.

This scope of services did not include professional assessment of other regulated critical areas. However, some observations about potential geologically hazardous areas is warranted given the affect this critical area can have on site development, particularly when it overlaps with wetlands and wetland buffers. Based on soils mapping, available topographic information, and the City's definitions of geologically hazardous areas (ECDC 23.80.020), the presence of erosion and/or landslide hazard areas on the eastern and western sides of the property at or near Wetlands A, B, and C and their buffers seems likely.

A geotechnical report would be required to establish the appropriate building setback and buffer from the top and toe of any erosion or landslide hazards. An additional analysis would be required to alter the hazard area, the minimum building setback and any required buffer (ECDC 23.80.070(A)(1-2)). A hazards analysis must demonstrate the following:

- The alteration will not increase surface water discharge or sedimentation to adjacent properties beyond predevelopment conditions,
- The alteration will not decrease slope stability on adjacent properties, and
- Such alterations will not adversely impact other critical areas (ECDC 23.80.070(A)(3)).

Shannon & Wilson will be providing the necessary geotechnical analyses under a separate scope of work.

7.0 CLOSURE

The findings and conclusions documented in this report have been prepared for specific application to this project, and 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, and in accordance with the terms and conditions set forth in our agreement. The conclusions and recommendations presented in this report are professional opinions based on interpretation of information currently available to us, and are made within the operational scope, budget, and schedule constraints of this project. No warranty, express or implied, is made.

Shannon & Wilson has prepared Appendix D, "Important Information About Your Wetland Delineation/Mitigation and/or Stream Classification Report," to assist you and others in understanding the use and limitations of our reports.

SHANNON & WILSON, INC.

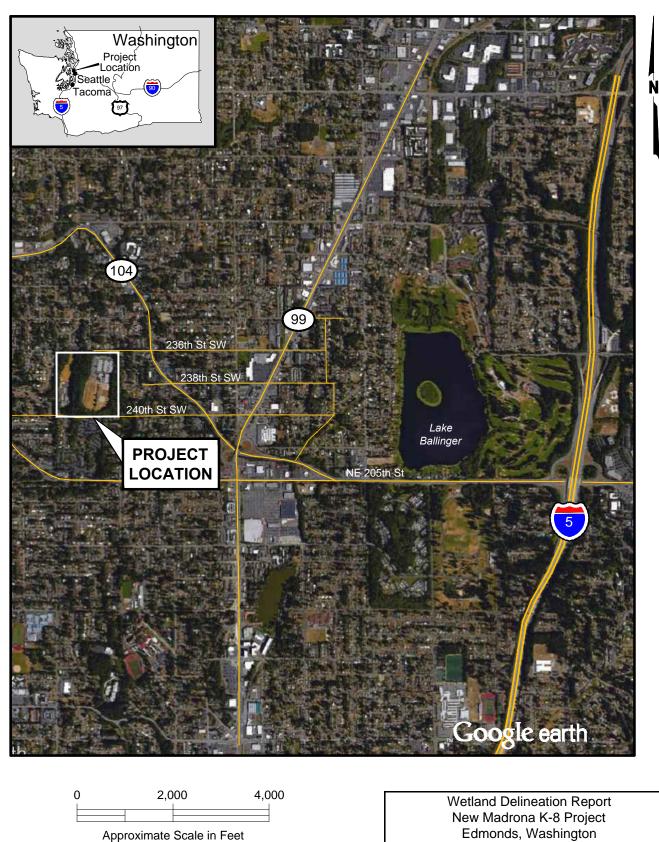
Kate Walter for

Sarah Corbin, PWS Biologist

SCC:PCJ:MWP:AJS:KLW/scc

8.0 REFERENCES

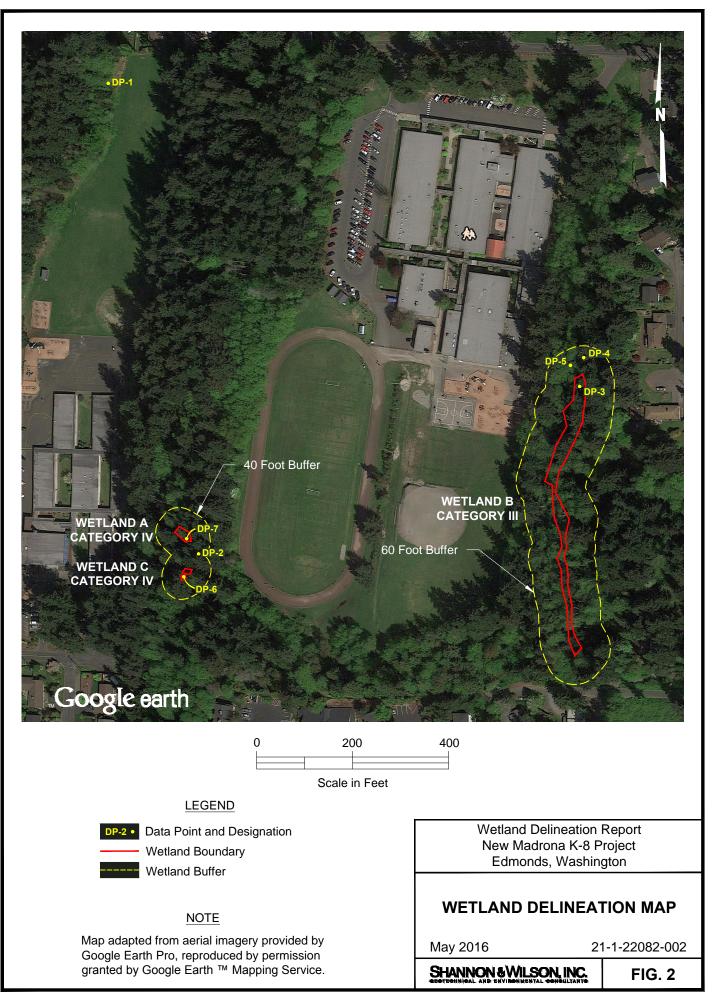
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NOTE

Map adapted from aerial imagery provided by Google Earth Pro, reproduced by permission granted by Google Earth ™ Mapping Service.

New Madrona K-8 Edmonds, Washi	•
VICINITY M	٩P
September 2015	21-1-22082-002
SHANNON & WILSON, INC.	FIG. 1



APPENDIX A

WETLAND DELINEATION METHODOLOGY

APPENDIX A

WETLAND DELINEATION METHODOLOGY

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APPENDIX A

WETLAND DELINEATION METHODOLOGY

The triple-parameter approach, as required in the Washington State Department of Ecology's (Ecology's) 1997 *Washington State Wetlands Identification and Delineation Manual*, the United States Army Corps of Engineers' (the Corps') 1987 *Corps of Engineers Wetland Delineation Manual*, and the Corps' 2010 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual*, and the Corps' 2010 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual*. *Western Mountains, Valleys, and Coast Region (Version 2.0)* was used to identify and delineate the wetlands on the site described in this report. The triple-parameter approach requires that vegetation, soils, and hydrology are each evaluated to determine the presence of wetlands. An area is considered to be a wetland if each of the following is met: (a) dominant hydrophytic vegetation is present in the area, (b) the soils in the area are hydric, and (c) the necessary hydrologic conditions within the area are met.

A determination of wetland presence was made by conducting a Routine Delineation. Corresponding upland and wetland plots were recorded to characterize surface and subsurface conditions and more accurately determine the boundaries of on-site wetlands.

A.1 WETLAND VEGETATION

Hydrophytic plants are plant species specially adapted for saturated and/or anaerobic conditions. These species can be found in areas where there is a significant duration and frequency of inundation, which produces permanently or periodically saturated soils. Hydrophytic species, due to morphological, physiological, and reproductive adaptations, have the ability to grow, effectively compete, reproduce, and thrive in anaerobic soil. Indicators of hydrophytic vegetation are based on the wetland indicator status of plant species on the national wetland plant list (Lichvar, 2012). Plants are categorized as Obligate (OBL), Facultative Wetland (FACW), Facultative (FAC), Facultative Upland (FACU), or Upland (UPL). Species in the facultative categories (FACW, FAC, and FACU) are recognized as occurring in both wetlands and non-wetlands to varying degrees. Most wetlands are dominated mainly by species rated as OBL, FACW, or FAC (Table A-1).

AppendixA_Methodology (Western Mtns) Dec 2012/

TABLE A-1PLANT INDICATOR STATUS GROUPS

Plant Indicator Status Categories
Obligate Wetland (OBL) – Plants that almost always occur in wetlands.
Facultative Wetland (FACW) – Plants that usually occur in wetlands, but may occur in non-wetlands.
Facultative (FAC) – Plants that occur in wetlands or non-wetlands.
Facultative Upland (FACU) – Plants that usually occur in non-wetlands, but may occur in wetlands.
Obligate Upland (UPL) – Plants that almost never occur in wetlands.

(Lichvar, 2012)

The approximate percentage of absolute cover for each of the different plant species occurring within the tree, sapling/shrub, woody vine, and herbaceous strata was determined. Trees within a 30-foot radius; sapling/shrubs and woody vines within a 15-foot radius; and herbaceous species within a 5-foot radius of each data point were identified and noted. However, where site conditions merited it, the dimensions of the tree, sapling/shrub, woody vine, and herbaceous strata were modified.

The dominance test is the primary hydrophytic vegetation indicator and it is used in all wetland delineations. Dominant plant species are considered to be those that, when cumulatively totaled in descending order of absolute percent cover, exceed 50 percent of the total absolute cover for each vegetative stratum. Any additional species individually representing 20 percent or greater of the total absolute cover for each vegetative strata are also considered dominant. Hydrophytic vegetation is considered to be present when greater than 50 percent of the dominant plant species within the area had an indicator status of OBL, FACW, or FAC.

If a plant community does not meet the dominance test in areas where hydric soils and wetland hydrology are present, vegetation is reevaluated using the prevalence index, plant morphological adaptations for living in wetlands, and/or abundance of bryophytes (e.g., mosses) adapted to living in wetlands. The prevalence index is a weighted average that takes into account the abundance of all plant species within the sampling area to determine if hydrophytic vegetation is more or less prevalent. Using the prevalence index, all plants within the sampling area are grouped by wetland indicator status and absolute percent cover is summed for each group. Total cover for each indicator status group is weighted by the following multipliers: OBL=1, FACW=2, FAC=3, FACU=4, UPL=5. The prevalence index is calculated by dividing the sum of the weighted totals by the sum of total cover in the sampling area. A prevalence index of 3.0 or less indicates that hydrophytic vegetation is present.

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A.2 HYDRIC SOILS

Hydric soils are defined as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (USDA SCS, 1994). Repeated periods of saturation and inundation for more than a few days, in combination with soil microbial activity, causes depletion in oxygen (anaerobic conditions) and results in delayed decomposition of organic matter and reduction of iron, manganese, and sulfur elements. As a result of these processes, most hydric soils develop distinctive characteristics observable in the field during both wet and dry periods. (USDA NRCS, 2010). These characteristics may be exhibited as an accumulation of organic matter; bluish-gray, green-gray, or low chroma and high value soil colors; mottling or other concentrations of iron and manganese; and/or hydrogen sulfide odor similar to a rotten egg smell.

The USDA Natural Resources Conservation Service (NRCS) has developed official hydric soil indicators as summarized in *Field Indicators of Hydric Soils in the United States* (USDA NRCS, 2010). These indicators were developed to assist in delineation of hydric soils and are based predominantly on hydric soils near the margins of wetlands. Some hydric soils, including soils within the wettest parts of wetlands, may lack any of the approved hydric soil indicators. If a hydric soil indicator is present, the soil is determined to be hydric. If no hydric soil indicator is present, additional site information is used to assess whether the soil meets the definition of hydric soil.

Identification of hydric soils was aided through observation of surface hydrologic characteristics and indicators of wetland hydrology (e.g., drainage patterns). Soil characteristics were observation at several data points, placed both inside and outside the wetland. Holes were dug with a shovel to the depth needed to document an indicator or to confirm the absence of hydric soil indicators. Soil organic content was estimated visually and texturally. Soil colors were examined in the field immediately after sampling. Dry soils were moistened. Soil colors were determined through analysis of the hue, value, and chroma best represented in the Munsell® Soil Color Chart.

A.3 WETLAND HYDROLOGY

Wetland hydrology is determined by observable evidence that inundation or soil saturation have occurred during a significant portion of the growing season repeatedly over a period of years so that wet condition have been sufficient to produce wetland vegetation and hydric soils. Wetland hydrology indicators give evidence of a continuing wetland hydrologic regime. Wetland hydrology criteria were considered to be satisfied if it appeared that wetland hydrology was

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present for at least 5 to 12.5 percent (12 to 31 days) of the growing season. The growing season in western Washington is typically considered to be from March 1 to October 31 (244 days). However, the growing season is considered to have begun when: (a) evidence of plant growth has begun on two non-evergreen vascular plants, and (b) the soil reaches a temperature of 41 degrees Fahrenheit at 12 inches. The Seattle District Corps of Engineers requires 14 consecutive days of inundation or saturation for a wetland hydrology to be considered present.

Wetland hydrology was evaluated by direct visual observation of surface inundation or soil saturation in data plots. The area near each data point was examined for indicators of wetland hydrology. Wetland hydrology indicators are categorized as primary or secondary based on their estimated reliability. Wetland hydrology was considered present if there was evidence of one primary indicator or at least two secondary indicators.

Some primary indicators include surface water, a shallow water table or saturated soils observed within 12 inches of the surface, dried watermarks, drift lines, sediment deposits, water-stained leaves, and algal mat/crust. Some secondary indicators include a water table within 12 to 24 inches of the surface during the dry season; drainage patterns; a landscape position in a depression, drainage, or fringe of a water body; and a shallow restrictive layer capable of perching water within 12 inches of the surface.

A.4 DISCLAIMER

This methodology was prepared for reference use only and is not intended to replace Ecology's 1997 Washington State Wetlands Identification and Delineation Manual, the 1987 Corps of Engineers Wetland Delineation Manual, or the Corps' 2010 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0).

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APPENDIX B

WETLAND DETERMINATION DATA FORMS – WESTERN MOUNTAINS, VALLEYS, AND COAST REGION

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

Project/Site: Madrona Flamen		City/County:	Edmond	5/Snohowish Sampling Date: 7/6/15
Applicant/Owner: Edhnords School	Distri	ð.	1111	State: Sampling Point:
nvestigator(s): 3. Carbin (PWS), A	. Summe	Section, Town	ship, Ra	nge: 536/727N/R4E
andform (hillslope, terrace, etc.): Day Freid				convex, none): Ante Slope (%):
Subregion (LRR):	Lat:			Long: Datum:
Soil Map Unit Name: Alderwood Urban land		2-81	-60	
Are climatic / hydrologic conditions on the site typical for this		1	1	
Are Vegetation, Soil, or Hydrology si				Normal Circumstances" present? Yes No
Are Vegetation, Soil, or Hydrology n	aturally pro	blematic?	(If ne	eded, explain any answers in Remarks.)
SUMMARY OF FINDINGS – Attach site map	showing	sampling	point le	ocations, transects, important features, etc.
Hydrophytic Vegetation Present? Yes No	-VA			
Hydric Soil Present? Yes No			Sampled	
Wetland Hydrology Present? Yes No	- <u>-</u>	within	a Wetlan	1d? Yes No
Remarks:				
/EGETATION – Use scientific names of plant		Denie I		Deminence Testungle best
Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant In Species?		Dominance Test worksheet: Number of Dominant Species
1				That Are OBL, FACW, or FAC: (A)
2				Total Number of Dominant
3				Species Across All Strata: (B)
4				Percent of Dominant Species 50
S. 6. 15'	q	= Total Cove	r	That Are OBL, FACW, or FAC: (A/B)
Sapling/Shrub Stratum (Plot size:)				Prevalence Index worksheet:
2.				Total % Cover of: Multiply by:
3				OBL species x 1 =
4.				FACW species x 2 =
5.	1			FAC species $16 \times 3 = 48$
61	()	= Total Cove	r	FACU species $3x = 32$
Herb Stratum (Plot size:)	12	11 E	A.C.	UPL species
1. Holcus lanatus	-2-	-N I	ACI	
2. Dancelion Taraxacum officinale			ACU	Prevalence Index = B/A =333
a Pod SO.	10		AC	Hydrophytic Vegetation Indicators:
4. PBa Sp. 5. Trifolium repens	3		AC	1 - Rapid Test for Hydrophytic Vegetation
6. Hainy Culis Ear,	2		FACU	2 - Dominance Test is >50% 3 - Prevalence Index is ≤3.0 ¹
7. (Hyporthaeris radicata)			-00.02	 4 - Morphological Adaptations¹ (Provide supporting
8.				data in Remarks or on a separate sheet)
9				5 - Wetland Non-Vascular Plants ¹
10				Problematic Hydrophytic Vegetation ¹ (Explain)
11				¹ Indicators of hydric soil and wetland hydrology must
101	100	= Total Cover		be present, unless disturbed or problematic.
Woody Vine Stratum (Plot size: 5)	2	YE	ACU	
1. Ivy Hedera holix.	0	<u> </u>	AUV	Hydrophytic Vegetation
2	7			Present? Yes No
% Bare Ground in Herb Stratum	2	= Total Cover		County Dates and a
Remarks: 0 10 m	A	March		
the congrir, reaconaces, pro	ment.	Upslop	L	
-				

US Army Corps of Engineers

Western Mountains, Valleys, and Coast - Version 2.0

SOIL

Sampling Point: DP- \

(inches) G - 5			Redox	Features	5			
0.5	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
	104123/4	_	-		-	-	Joan wlg	mels
5= 74	104123/4	80	104124/6	5	C	M	silt loam	
	All and a second se	1.51	054412	15	D	M		40-0
		—	1.21.12					
		_		_	_			
Type: C=Cor	centration, D=Dep	letion, RM=	Reduced Matrix, CS=	Covered	or Coate	d Sand G	the second s	PL=Pore Lining, M=Matrix.
Histosol (/ Histic Epir Black Hist Hydrogen Depleted I Thick Darl Sandy Mu	A1) bedon (A2)		.RRs, unless otherv Sandy Redox (S Stripped Matrix (Loamy Mucky Mi Loamy Gleyed M Depleted Matrix (Redox Dark Surfi Depleted Dark Surfi Redox Depressio	5) S6) neral (F1 latrix (F2) (F3) ace (F6) urface (F) (except	MLRA 1)	2 cm Muc Red Parer Very Shall Other (Exj ³ Indicators of h wetland hyd	Problematic Hydric Soils ³ : (A10) In Material (TF2) ow Dark Surface (TF12) olain in Remarks) ydrophytic vegetation and lrology must be present, rbed or problematic.
estrictive La	yer (if present):		And a second second	10.00				
Type:	1.0.20.201							11
Depth (inch	es):						Hydric Soil Prese	nt? Yes No
	Y					ahibi-l		
DROLOG	ology Indicators: ors (minimum of or	ne required:	check all that apply) Water-Stain				Secondary I	ndicators (2 or more required)
PROLOG	ology Indicators: ors (minimum of or ater (A1)	ne required:	Water-Staine	ed Leave	s (B9) (e)		Secondary I	tained Leaves (B9) (MLRA 1, 2,
DROLOG	ology Indicators: ors (minimum of or ater (A1) r Table (A2)	ne required;	Water-Staine MLRA 1,	ed Leave 2, 4A, ar	s (B9) (e)		<u>Secondary I</u> Water-S 4A, a	lained Leaves (B9) (MLRA 1, 2 nd 4B)
'DROLOG /etland Hydr <u>rimary Indicat</u> <u>Surface W</u> <u>High Wate</u>	ology Indicators: ors (minimum of or ater (A1) r Table (A2) (A3)	ne required:	Water-Staine	ed Leave 2, 4A, ar 311)	s (B9) (e) nd 4B)		<u>Secondary I</u> Water-S 4A, a Drainag	tained Leaves (B9) (MLRA 1, 2 nd 4B) e Patterns (B10)
DROLOG Actiand Hydro Contemporation Saturation Water Mar	ology Indicators: ors (minimum of or ater (A1) r Table (A2) (A3)	ne required:	Water-Staine MLRA 1, Salt Crust (E	ed Leave 2, 4A, ar 311) rtebrates	s (B9) (e) nd 4B) (B13)		<u>Secondary I</u> <u>Vater-S</u> 4A, a Drainag <u>Dry-Sea</u>	tained Leaves (B9) (MLRA 1, 2 nd 4B) ∋ Patterns (B10) son Water Table (C2)
DROLOG Actiand Hydro <u>Cimary Indicat</u> <u>Surface W</u> <u>High Wate</u> <u>Saturation</u> <u>Water Mar</u>	ology Indicators: ors (minimum of or ater (A1) r Table (A2) (A3) (A3) ks (B1) Deposits (B2)	ne required:	Water-Staine MLRA 1, Salt Crust (E Aquatic Inve	ed Leave 2, 4A, ar 311) rtebrates ulfide Odd	s (B9) (e) nd 4B) (B13) or (C1)	cept	<u>Secondary I</u> Water-S 4A, a Drainag Dry-Sea Saturatio	tained Leaves (B9) (MLRA 1, 2 nd 4B) ∋ Patterns (B10) son Water Table (C2)
DROLOG (etiand Hydr <u>imary Indicat</u> <u>Surface W</u> <u>High Wate</u> <u>Saturation</u> <u>Water Mar</u> <u>Sediment I</u> <u>Drift Depos</u> <u>Algal Mat c</u>	ology Indicators: ors (minimum of or ater (A1) r Table (A2) (A3) (A3) ks (B1) Deposits (B2) sits (B3) or Crust (B4)	ne required;	Water-Staino MLRA 1, Salt Crust (E Aquatic Inve	ed Leave 2, 4A, ar 311) rtebrates ulfide Odd	s (B9) (e) nd 4B) (B13) or (C1) es along L	ccept .iving Roo	<u>Secondary I</u> Water-S 4A, a Drainag Dry-Sea Saturations Is (C3) Geomor	tained Leaves (B9) (MLRA 1, 2 nd 4B) e Patterns (B10) son Water Table (C2) on Visible on Aerial Imagery (C9
PROLOG Petland Hydro imary Indicat Surface W High Wate Saturation Water Mar Sediment I Drift Depose Algal Mat co Iron Depose	ology Indicators: ors (minimum of or ater (A1) r Table (A2) (A3) ks (B1) Deposits (B2) sits (B3) or Crust (B4) its (B5)	ne required;	Water-Staind MLRA 1, Salt Crust (E Aquatic Inve Hydrogen St Oxidized Rh	ed Leave 2, 4A, ar 311) rtebrates ulfide Odr izosphere Reduced	s (B9) (e) nd 4B) (B13) or (C1) es along L i Iron (C4)	ccept .iving Roo	<u>Secondary I</u> Water-S 4A, a Drainag Dry-Sea Saturation Is (C3) Geomor Shallow	tained Leaves (B9) (MLRA 1, 2 nd 4B) e Patterns (B10) son Water Table (C2) on Visible on Aerial Imagery (C9 phic Position (D2)
PROLOG Vetland Hydro mary Indicat Surface W High Wate Saturation Water Mar Sediment I Drift Depos Algal Mat o Iron Depos Surface So	ology Indicators: ors (minimum of or ater (A1) r Table (A2) (A3) ks (B1) Deposits (B2) sits (B3) or Crust (B4) its (B5) il Cracks (B6)		Water-Staine MLRA 1, Salt Crust (E Aquatic Inve Hydrogen Si Oxidized Rh Presence of Recent Iron Stunted or S	ed Leave 2, 4A, ar 311) rtebrates ulfide Odd izosphere Reduced Reduction tressed F	s (B9) (ex nd 4B) (B13) or (C1) es along L I Iron (C4) n in Tilled Plants (D1	ccept living Roo) Soils (C6)	Secondary I Water-S 4A, a Drainag Dry-Sea Saturati ts (C3) Geomor Shallow) FAC-Ne Raised /	tained Leaves (B9) (MLRA 1, 2 nd 4B) Patterns (B10) son Water Table (C2) on Visible on Aerial Imagery (C9 phic Position (D2) Aquitard (D3) utral Test (D5) Ant Mounds (D6) (LRR A)
DROLOG Vetland Hydro Surface W Surface W High Wate Saturation Water Mare Sediment I Drift Depose Algal Mat of Iron Depose Surface Soc Inundation	ology Indicators: ors (minimum of or ater (A1) r Table (A2) (A3) ks (B1) Deposits (B2) sits (B3) or Crust (B4) its (B5) ol Cracks (B6) Visible on Aerial In	nagery (B7)	Water-Staind MLRA 1, Salt Crust (E Aquatic Inve Hydrogen Si Oxidized Rh Presence of Recent Iron Stunted or S Other (Expla	ed Leave 2, 4A, ar 311) rtebrates ulfide Odd izosphere Reduced Reduction tressed F	s (B9) (ex nd 4B) (B13) or (C1) es along L I Iron (C4) n in Tilled Plants (D1	ccept living Roo) Soils (C6)	Secondary I Water-S 4A, a Drainag Dry-Sea Saturativ ts (C3) Geomor Shallow) FAC-Ne Raised /	tained Leaves (B9) (MLRA 1, 2 nd 4B) e Patterns (B10) son Water Table (C2) on Visible on Aerial Imagery (C9 phic Position (D2) Aquitard (D3) utral Test (D5)
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US Army Corps of Engineers

WETLAND DETERMINATION DATA FORM – Western Mou	intains, Valleys, and Coast Region
roject/Site: Madipya Elementary city/county: Edw	which is Singhowish Sampling Date: 4/7/1
oplicant/Owner: Edwards School Bistrict.	state: INIA Sampling Point: DP-2
vestigator(s): 5 Corbin (PWS), B, ONEIL PWSection, Township, Ra	
	convex, none): Converte Slope (%): 50
ubregion (LRR):A Lat: Lat:	_ Long: Datum:
	ODES NWI classification: N/A
	and the second
동네 동네는 집에 가지 않는 것은 것이 아니는 것이 같은 것이 많은 것이 아니는 것이 아니는 것이 없는 것이 없다. 이 것이 가지 않는 것이 없는 것이 없는 것이 없는 것이 없는 것이 없는 것이 없다.	(If no, explain in Remarks.)
사실 귀엽 것이 ~~~~~ 것이 ~~~~~ 이것 귀가에야? ~~~~~ 신지가 가지 않는 것이 많았다. ~~~~ 반값	"Normal Circumstances" present? Yes No
e Vegetation, Soil, or Hydrology naturally problematic? (If ne	eeded, explain any answers in Remarks.)
UMMARY OF FINDINGS – Attach site map showing sampling point I	ocations, transects, important features, etc.
Hydrophytic Vegetation Present? Yes No	1 mm
Hydric Soil Present? Yes No V Is the Sampled within a Wetla	
vetiand Hydrology Present? Yes No	
Remarks: Upland near Wetlands A&C	
Standing shugs near data dot. 8	Evidence of woodverdieruse.
EGETATION – Use scientific names of plants.	energy and energy
201 Absolute Dominant Indicator	Dominance Test worksheet:
ree Stratum (Plot size:) % Cover Species? Status	Number of Dominant Species
Doug FIT (Pseudotsuga menzies) 50 Y FALV	That Are OBL, FACW, or FAC: (A)
Hendlock (TEuga netrophylla) 20 Y FACU	Total Number of Dominant
. INEC UNITA PICOTAS IO N TAC	Species Across All Strata:((B)
I C I 80 = Total Cover	Percent of Dominant Species
Sapling/Shrub Stratum (Plot size: 151)	That Are OBL, FACW, or FAC: (A/B)
. Holly (Ilex agoitolium) 25 Y FACU	Prevalence Index worksheet: Total % Cover of: Multiply by:
Red Eldenberry (Sambrus racemosa) 10 Y FACU	OBL species $ x_1 = O$
Rechuddeberry Whiching 10 Y PARD	FACW species x 2 =
Parvitolium}	FAC species IG x3= 30
45 = Total Cover	FACU species $231 \times 4 = 924$
lerb Stratum (Plot size:)	UPL species x 5 =
. 5word lern (Polystichum monitum) Go Y FACU	Column Totals: 24 (A) 954 (B)
Stinky Opob 5 N FACU	Prevalence Index = B/A = 3,96
Arrowleap 5 N FACU	Hydrophytic Vegetation Indicators:
Dauchelion I N tacu	1 - Rapid Test for Hydrophytic Vegetation
Bradien Fern 15 N FACU	2 - Dominance Test is >50%
· · · · · · · · · · · · · · · · · · ·	3 - Prevalence Index is ≤3.0 ¹
· · · · · · · · · · · · · · · · · · ·	 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
	5 - Wetland Non-Vascular Plants ¹
0.	Problematic Hydrophytic Vegetation ¹ (Explain)
1	¹ Indicators of hydric soil and wetland hydrology must
1 cl BC = Total Cover	be present, unless disturbed or problematic.
Voody Vine Stratum (Plot size:	/
. Trailing blackberry (Rubus ursinus) 15 Y FACU	Hydrophytic
. Ivy (Hedera Wellx) 15 Y FACU	Vegetation V Present? Yes No
<u></u>	
6 Bara Ground in Harb Stratum	
6 Bare Ground in Herb Stratum	k

SOIL

			12	20
Sampling	Point:	\square	1-	. 9

Profile Description: (Descr				90,000,000			an a
Depth <u>Matr</u> (inches) Color (moist		Color (moist)	x Features %	Type'	Loc ²	Texture	Remarks
)-5 5107C	1 100		- 10	1100		laam	
5-16+ 7.51 5/	100	7.57R4/3	1101			I.	0
5-16+ 2.51 5/	3(90)	4.511415	(10)		_	loanna	Sauce
						-	
							- 1
				AL-22.00		- 2	
Type: C=Concentration, D= ydric Soil Indicators: (Ap					d Sand Gr		ocation: PL=Pore Lining, M=Matrix. tors for Problematic Hydric Soils ³ :
	plicable to all		20201101114	su./			
_ Histosol (A1) _ Histic Epipedon (A2)		Sandy Redox (S Stripped Matrix					cm Muck (A10) ed Parent Material (TF2)
Black Histic (A3)		Loamy Mucky M) (except	MLRA 1)		ery Shallow Dark Surface (TF12)
Hydrogen Sulfide (A4)		Loamy Gleyed I					ther (Explain in Remarks)
_ Depleted Below Dark Su	face (A11)	Depleted Matrix					
Thick Dark Surface (A12	1	Redox Dark Su					ators of hydrophytic vegetation and
Sandy Mucky Mineral (S		Depleted Dark S		7)			lland hydrology must be present,
_ Sandy Gleyed Matrix (S4		Redox Depress	ions (F8)			unl	ess disturbed or problematic.
estrictive Layer (if present	():						
Type:						35350.5	No. IN V
CLOCK CONTRACTOR AND						Ludrin Ca	
Depth (inches): Remarks: TWL + 7, 5	57124 <u>(3</u>	coloring ap	opears	-to k	ve par	Hydric So For H	ne matrix.
Depth (inches): remarks: The 7 , s /DROLOGY /etland Hydrology Indicato	ors:			-to k	ie pau	tof ti	rematrix.
Depth (inches): emarks: THL 7 , s /DROLOGY /etland Hydrology Indicato rimary Indicators (minimum	ors:	d; check all that apply	v)			tof ti	condary Indicators (2 or more required)
Depth (inches): emarks: THL 7 , s 'DROLOGY /etland Hydrology Indicato <u>/imary Indicators (minimum</u> _ Surface Water (A1)	ors:	d; check all that appl Water-Stai	y) ined Leave	es (B9) (e		tof ti	condary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2,
Depth (inches): emarks: THL 7 , s DROLOGY /DROLOGY /etland Hydrology Indicator <i>rimary Indicators (minimum</i> Surface Water (A1) High Water Table (A2)	ors:	d; check all that apply Water-Stai MLRA	v) ined Leave 1, 2, 4A, a	es (B9) (e		tof ti	condary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
Depth (inches): emarks: THL 7 , s DROLOGY fetland Hydrology Indicator imary Indicators (minimum Surface Water (A1) High Water Table (A2) Saturation (A3)	ors:	d; check all that apply Water-Stai Salt Crust	v) ined Leave 1, 2, 4A, a (B11)	es (B9) (e nd 4B)		tof ti	condary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) Drainage Patterns (B10)
Depth (inches): emarks: THL 7 , s DROLOGY fetland Hydrology Indicato fetland Hydrology Indicato fimary Indicators (minimum Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1)	ors:	d; check all that apply Water-Stai Salt Crust Aquatic Inv	y) ined Leave 1, 2, 4A, a (B11) vertebrate:	es (B9) (e. nd 4B) s (B13)		tof ti	condary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2)
Depth (inches): emarks: THL + 7 , 5 TOROLOGY Tetland Hydrology Indicator imary Indicators (minimum Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2)	ors:	d; check all that apply Water-Stai MLRA Salt Crust Aquatic Inv Hydrogen	y) ined Leave 1, 2, 4A, a (B11) vertebrate: Sulfide Od	es (B9) (e: nd 4B) s (B13) lor (C1)	xcept	for fr	we multiply . condary 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)
Depth (inches): emarks: TWL 7 , S 'DROLOGY fetland Hydrology Indicato cimary Indicators (minimum Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3)	ors:	d; check all that apply Water-Stai Salt Crust Aquatic Inv Hydrogen : Oxidized R	y) ined Leave 1, 2, 4A, a (B11) vertebrates Sulfide Od Rhizospher	es (B9) (e: nd 4B) s (B13) lor (C1) es along	kcept Living Roo	for fr	we multiply . condary 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)
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Depth (inches): emarks: /DROLOGY /etland Hydrology Indicator imary Indicators (minimum 	ial Imagery (B cave Surface (Yes Yes Yes	d; check all that apply Water-Stai MLRA Salt Crust Aquatic Inv Hydrogen : Oxidized R Presence of Recent Iron Stunted or Stunted or To Depth (ino No Depth (ino	y) ined Leave 1, 2, 4A, a (B11) vertebrates Sulfide Od Rhizospher of Reduce n Reductio Stressed blain in Re- ches): ches):	es (B9) (e. nd 4B) s (B13) lor (C1) es along d Iron (C4 plants (D marks)	Living Roo) I Soils (C6 1) (LRR A)	+ of +u	condary 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)
Depth (inches): temarks: /DROLOGY /dtland Hydrology Indicato rimary Indicators (minimum 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 Aer	ial Imagery (B cave Surface (Yes Yes Yes	d; check all that apply Water-Stai MLRA Salt Crust Aquatic Inv Hydrogen : Oxidized R Presence of Recent Iron Stunted or Stunted or To Depth (ino No Depth (ino	y) ined Leave 1, 2, 4A, a (B11) vertebrates Sulfide Od Rhizospher of Reduce n Reductio Stressed blain in Re- ches): ches):	es (B9) (e. nd 4B) s (B13) lor (C1) es along d Iron (C4 plants (D marks)	Living Roo) I Soils (C6 1) (LRR A)	+ of +u	condary 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)
Depth (inches): emarks: /DROLOGY /etland Hydrology Indicator rimary Indicators (minimum 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 (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Surface Soil Cracks (B6) Inundation Visible on Aer Sparsely Vegetated Cond teld Observations: urface Water Present? //ater Table Present? //ater Table Present? //ater Table Present? //ater Table Present? escribe Recorded Data (street)	ial Imagery (B cave Surface (Yes Yes Yes	d; check all that apply Water-Stai MLRA Salt Crust Aquatic Inv Hydrogen : Oxidized R Presence of Recent Iron Stunted or Stunted or To Depth (ino No Depth (ino	y) ined Leave 1, 2, 4A, a (B11) vertebrates Sulfide Od Rhizospher of Reduce n Reductio Stressed blain in Re- ches): ches):	es (B9) (e. nd 4B) s (B13) lor (C1) es along d Iron (C4 plants (D marks)	Living Roo) I Soils (C6 1) (LRR A)	+ of +u	condary 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)
Depth (inches): temarks: /DROLOGY /etiand Hydrology Indicato rimary Indicators (minimum 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 (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Surface Soil Cracks (B6) Inundation Visible on Aer Sparsely Vegetated Cond teld Observations: urface Water Present? //ater Table Present? //ater Table Present? aturation Present? mcludes capillary fringe) escribe Recorded Data (street)	ial Imagery (B cave Surface (Yes Yes Yes	d; check all that apply Water-Stai MLRA Salt Crust Aquatic Inv Hydrogen : Oxidized R Presence of Recent Iron Stunted or Stunted or To Depth (ino No Depth (ino	y) ined Leave 1, 2, 4A, a (B11) vertebrates Sulfide Od Rhizospher of Reduce n Reductio Stressed blain in Re- ches): ches):	es (B9) (e. nd 4B) s (B13) lor (C1) es along d Iron (C4 plants (D marks)	Living Roo) I Soils (C6 1) (LRR A)	+ of +u	condary 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)

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WETLAND DETE	RMINATION DA	TA FOR	VI – Western Mou	Intains, Valleys, and Coast Region
Project/Site: Malana S	School	2.11	City/County:	mondi Shoci Sampling Date: DP-3
Applicant/Owner: Edmonds	the second s	st	eta le parta r	State: WA Sampling Point: 7/7/15
Investigator(s): BED F 50				
			Section, Township, Ra	ange
Landform (hillslope, terrace, etc.):				convex, none): <u>CONCAUR</u> Slope (%): <u></u>
Subregion (LRR):A	· · · · · · · · · · · · · · · · · · ·	_ Lat:		_ Long: Datum:
Soil Map Unit Name: <u>ALDIAWIOA</u>	L-Ucoan 2	-870	slopes	NWI classification: <u>N/A</u>
Are climatic / hydrologic conditions on t	the site typical for thi	s time of yea	ar? Yes No_	(If no, explain in Remarks.)
Are Vegetation, Soil, or	r Hydrology s	significantly	disturbed?	"Normal Circumstances" present? Yes A
Are Vegetation, Soil, or	Hydrology r	naturally pro	blematic? $N>~~(If n$	eeded, explain any answers in Remarks.)
SUMMARY OF FINDINGS - A	Attach site map	showing	sampling point	locations, transects, important features, etc.
Hydrophytic Vegetation Present?		lo		
Hydrophytic Vegetation Present?		lo	Is the Sample	d Area
Wetland Hydrology Present?		lo	within a Wetla	ind? Yes No
Remarks:	P			
In welland	15			
	<u></u>			
VEGETATION – Use scientific	c names of plan	its.		
Tree Stratum (Plot size: 30	X	Absolute % Cover	Dominant Indicator Species? Status	Dominance Test worksheet:
1. WRC		20	Y FAC	Number of Dominant Species (A)
2. Alder		10	Y FAC	
3.				Total Number of Dominant Species Across All Strata:(B)
4				
Server the management of the	151	30	= Total Cover	Percent of Dominant Species That Are OBL, FACW, or FAC: (A/B)
Sapling/Shrub Stratum (Plot size:	()))			Prevalence Index worksheet:
1		· — ·		Total % Cover of: Multiply by:
2		~ <u> </u>		OBL species x 1 =
3				FACW species x 2 =
5				FAC species x 3 =
· /		0	= Total Cover	FACU species x 4 =
Herb Stratum (Plot size: 5		7	VI DRI	UPL species x 5 =
the second data and the se	carex olonupla	30	7 000	Column Totals: (A) (B)
2. Willowhere	· Nadar	5	N FACIN	Prevalence Index = B/A =
	s Pseudacorus	15	Y OBL	Hydrophytic Vegetation Indicators:
4. RCG			Y FACH	C, take toot in the option to go and
5			<u> </u>	2 - Dominance Test is >50%
6				3 - Prevalence Index is ≤3.0 ¹ 4 - Morphological Adaptations ¹ (Provide supporting
8				data in Remarks or on a separate sheet)
9				5 - Wetland Non-Vascular Plants ¹
10.				Problematic Hydrophytic Vegetation ¹ (Explain)
11				¹ Indicators of hydric soil and wetland hydrology must
	2	41	= Total Cover	be present, unless disturbed or problematic.
Woody Vine Stratum (Plot size:	>)			/
1			·	Hydrophytic
2	60.4	m		Vegetation Present? Yes No
% Bare Ground in Herb Stratum	51%	-4-	= Total Cover	
Remarks:				
16" STRA (4" +ull) WI	the wood per	ker h	les	
in a lot in the second second		1121	123	

US Army Corps of Engineers

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SOIL

	5	G.	-1
Sampling Point:	12	r	2

Depth	Matrix		Redox Features			
(inches)	Color (moist)	%		Type ¹ Loc ²		Remarks
2-4	10422/1	100		A. 14	Silty Loam	
1-17	104R 3/1	60	(see Remarks)		11 1	
7-10	75425/6	100			11 25	
18-204	10 4/2 3/1	60	(sa Removies)		11 -21	
	1011071			<u> 2</u> 2		
Hydric Soll I Histosol Histic Ep Black His Hydroge Depleted Thick Da Sandy M Sandy G	ndicators: (Applic (A1) ipedon (A2) stic (A3) n Sulfide (A4) I Below Dark Surfac rk Surface (A12) iucky Mineral (S1) leyed Matrix (S4)	able to al	 Reduced Matrix, CS=Covered of LRRs, unless otherwise noted. Sandy Redox (S5) Stripped Matrix (S6) Loamy Mucky Mineral (F1) (Loamy Gleyed Matrix (F2) Depleted Matrix (F3) Redox Dark Surface (F6) Depleted Dark Surface (F7) Redox Depressions (F8) 	-) (except MLRA 1)	Indicators fo 2 cm Mu Red Par Very Sha Other (E ³ Indicators of wetland h	n: PL=Pore Lining, M=Matrix. or Problematic Hydric Soils ³ : ck (A10) ent Material (TF2) allow Dark Surface (TF12) xplain in Remarks) Thydrophytic vegetation and ydrology must be present, turbed or problematic.
estrictive L	ayer (if present):		and the second se		· · · · · · · · · · · · · · · · · · ·	/
Type:	6.776.Y				a sana an	V
Depth (inc emarks:	nes):				Hydric Soil Pres	sent? Yes No
		of 4/2 (5	5011 clu- rippean 3) 10485/2 (20%)	rs mixed "charco	up/fill al" (3%)	includes =
YDROLOG	GY Irology Indicators:		5.51 Clut el ppean 1) 10 485/2 (20%) d: check all that apply)	rs mixed "charco	al" (3%)	Indicators (2 or more required)
DROLOG	GY Irology Indicators:		C.S. Contract	"charco	al" (3%) Secondary	Indicators (2 or more required)
DROLOG	GY Irology Indicators: ators (minimum of o		d; check all that apply)	hcharce (B9) (except	al" (3%) <u>Secondary</u> Water	Indicators (2 or more required) Stained Leaves (B9) (MILRA 1, 2, , and 4B)
Processing of the second secon	GY Irology Indicators: ators (minimum of o Water (A1) ter Table (A2) n (A3)		d; check all that apply) Water-Stained Leaves (MLRA 1, 2, 4A, and Salt Crust (B11)	^{ti} charce (B9) (except 1 4B)	al" (3%) <u>Secondan</u> Water 4A <u>V</u> Draina	(Indicators (2 or more required) -Stained Leaves (B9) (MLRA 1, 2, , and 4B) ige Patterns (B10)
PROLOC Vetland Hyd rimary Indic Surface V High Wat Saturatio Water Mater	GY Irology Indicators: ators (minimum of o Water (A1) ter Table (A2) n (A3) arks (B1)		d; check all that apply) <u>V</u> Water-Stained Leaves (MLRA 1, 2, 4A, and Salt Crust (B11) Aquatic Invertebrates (B	^{ti} charce (B9) (except 4 4B) B13)	<u>Secondan</u> <u>Water</u> <u>A</u> <u>U</u> Draina _ Dry-Se	r Indicators (2 or more required) -Stained Leaves (B9) (MLRA 1, 2, , and 4B) age Patterns (B10) eason Water Table (C2)
/DROLOG /etland Hyd rimary Indic Surface V High Wat Saturatio Water Ma Sedimen	GY Irology Indicators: ators (minimum of o Water (A1) ter Table (A2) n (A3) arks (B1) t Deposits (B2)		d; check all that apply) <u>V</u> Water-Stained Leaves (MLRA 1, 2, 4A, and Salt Crust (B11) Aquatic Invertebrates (B Hydrogen Sulfide Odor	1) Charce (B9) (except 4 4B) B13) (C1)	<u>Secondan</u> <u>Secondan</u> Water <u>4A</u> Draina _ Dry-Se Satura	(Indicators (2 or more required) -Stained Leaves (B9) (MILRA 1, 2, , and 4B) nge Patterns (B10) eason Water Table (C2) ation Visible on Aerial Imagery (C9
PROLOC Vetland Hyd rimary Indic Surface V High Wat Saturatio Water Ma Sedimen Drift Dep	GY Irology Indicators: ators (minimum of o Water (A1) ter Table (A2) n (A3) arks (B1) t Deposits (B2) osits (B3)		d: check all that apply) Water-Stained Leaves (MLRA 1, 2, 4A, and Salt Crust (B11) Aquatic Invertebrates (B Hydrogen Sulfide Odor Oxidized Rhizospheres	112harco (B9) (except 14B) B13) (C1) s along Living Roo	Secondary <u>Secondary</u> Water 4A Draina Dry-Se Satura ts (C3) Geom	<u>Indicators (2 or more required)</u> -Stained Leaves (B9) (NILRA 1, 2, , and 4B) age Patterns (B10) eason Water Table (C2) ation Visible on Aerial Imagery (C9 orphic Position (D2)
PROLOG Petland Hyd rimary Indic Surface N High Wat Saturatio Water Ma Sedimen Drift Dep Algal Mat	GY Irology Indicators: ators (minimum of o Water (A1) ter Table (A2) n (A3) arks (B1) t Deposits (B2) osits (B3) t or Crust (B4)		d: check all that apply) Water-Stained Leaves (MLRA 1, 2, 4A, and Salt Crust (B11) Aquatic Invertebrates (B Hydrogen Sulfide Odor Oxidized Rhizospheres Presence of Reduced In	112harco (B9) (except 4 4B) B13) (C1) s along Living Roo ron (C4)	secondary <u>Secondary</u> Water AA <u>V</u> Draina Dry-Se Satura ts (C3) <u>C</u> Geom Shallo	(Indicators (2 or more required) -Stained Leaves (B9) (NILRA 1, 2, , and 4B) age Patterns (B10) eason Water Table (C2) ation Visible on Aerial Imagery (C9 orphic Position (D2) w Aquitard (D3)
Contract of the second se	GY Irology Indicators: ators (minimum of o Water (A1) ter Table (A2) n (A3) arks (B1) t Deposits (B2) osits (B3) t or Crust (B4) osits (B5)		d: check all that apply) Water-Stained Leaves (MLRA 1, 2, 4A, and Salt Crust (B11) Aquatic Invertebrates (B Hydrogen Sulfide Odor Oxidized Rhizospheres Presence of Reduced Ir Recent Iron Reduction i	(B9) (except 4 4B) B13) (C1) along Living Roo ron (C4) in Tilled Soils (C6		Indicators (2 or more required) -Stained Leaves (B9) (MLRA 1, 2, , and 4B) age Patterns (B10) eason Water Table (C2) tion Visible on Aerial Imagery (C9 orphic Position (D2) w Aquitard (D3) leutral Test (D5)
PROLOG Arrow Indice Surface N High Wat Saturatio Water Ma Sedimen Drift Dep Algal Mat Iron Depo Surface S	GY Irology Indicators: ators (minimum of o Water (A1) ter Table (A2) n (A3) arks (B1) t Deposits (B2) osits (B3) t or Crust (B4) osits (B5) Soil Cracks (B6)	ne require	d: check all that apply) Water-Stained Leaves (MLRA 1, 2, 4A, and Salt Crust (B11) Aquatic Invertebrates (B Hydrogen Sulfide Odor Oxidized Rhizospheres Presence of Reduced In Recent Iron Reduction i Stunted or Stressed Pla	(B9) (except 4 4B) B13) (C1) along Living Roo ron (C4) in Tilled Soils (C6 ants (D1) (LRR A)		Andicators (2 or more required) -Stained Leaves (B9) (MLRA 1, 2, , and 4B) age Patterns (B10) eason Water Table (C2) tion Visible on Aerial Imagery (C9 orphic Position (D2) w Aquitard (D3) leutral Test (D5) d Ant Mounds (D6) (LRR A)
DROLOG etland Hyd imary Indic Surface V High Wat Saturatio Water Ma Sedimen Drift Dep Algal Mat Iron Dep Surface S Inundatio	GY Irology Indicators: ators (minimum of o Water (A1) ter Table (A2) n (A3) arks (B1) t Deposits (B2) osits (B3) t or Crust (B4) osits (B5)	ne require	d; check all that apply) Water-Stained Leaves (MLRA 1, 2, 4A, and Salt Crust (B11) Aquatic Invertebrates (B Hydrogen Sulfide Odor Oxidized Rhizospheres Presence of Reduced Ir Recent Iron Reduction i Stunted or Stressed Pla 7) Other (Explain in Rema	(B9) (except 4 4B) B13) (C1) along Living Roo ron (C4) in Tilled Soils (C6 ants (D1) (LRR A)		Indicators (2 or more required) -Stained Leaves (B9) (MLRA 1, 2, , and 4B) age Patterns (B10) eason Water Table (C2) tion Visible on Aerial Imagery (C9 orphic Position (D2) w Aquitard (D3) leutral Test (D5)
DROLOG etland Hyd imary Indic Surface N High Wal Saturatio Water Ma Sedimen Drift Dep Algal Mai Iron Dep Surface S Inundatio Sparsely	GY Irology Indicators: ators (minimum of o Water (A1) ter Table (A2) n (A3) arks (B1) t Deposits (B2) osits (B3) t or Crust (B4) osits (B5) Soil Cracks (B6) on Visible on Aerial I Vegetated Concave	ne require	d; check all that apply) Water-Stained Leaves (MLRA 1, 2, 4A, and Salt Crust (B11) Aquatic Invertebrates (B Hydrogen Sulfide Odor Oxidized Rhizospheres Presence of Reduced Ir Recent Iron Reduction i Stunted or Stressed Pla 7) Other (Explain in Rema	(B9) (except 4 4B) B13) (C1) along Living Roo ron (C4) in Tilled Soils (C6 ants (D1) (LRR A)		Andicators (2 or more required) -Stained Leaves (B9) (MLRA 1, 2, , and 4B) age Patterns (B10) eason Water Table (C2) tion Visible on Aerial Imagery (C9 orphic Position (D2) w Aquitard (D3) leutral Test (D5) d Ant Mounds (D6) (LRR A)
Vetland Hyd rimary Indic Surface V High Wat Saturatio Water Ma Sedimen Drift Dep Algal Mat Iron Dep Surface S Inundatio Sparsely	GY Irology Indicators: ators (minimum of o Water (A1) ter Table (A2) n (A3) arks (B1) t Deposits (B2) osits (B3) t or Crust (B4) osits (B5) Soil Cracks (B6) in Visible on Aerial I Vegetated Concave rations:	ne require magery (B Surface (d; check all that apply) Water-Stained Leaves (MLRA 1, 2, 4A, and Salt Crust (B11) Aquatic Invertebrates (B Hydrogen Sulfide Odor Oxidized Rhizospheres Presence of Reduced Ir Recent Iron Reduction i Stunted or Stressed Pla 7) Other (Explain in Rema	(B9) (except 4 4B) B13) (C1) along Living Roo ron (C4) in Tilled Soils (C6 ants (D1) (LRR A)		Andicators (2 or more required) -Stained Leaves (B9) (MLRA 1, 2, , and 4B) age Patterns (B10) eason Water Table (C2) tion Visible on Aerial Imagery (C9 orphic Position (D2) w Aquitard (D3) leutral Test (D5) d Ant Mounds (D6) (LRR A)
Verland Hyd rimary Indic Surface V High Wai Saturatio Water Ma Sedimen Drift Dep Algal Mai Iron Dep Surface S Inundatio Sparsely eld Observ Urface Wate	GY Irology Indicators: ators (minimum of o Water (A1) ter Table (A2) n (A3) arks (B1) t Deposits (B2) osits (B3) t or Crust (B4) osits (B5) Soil Cracks (B6) on Visible on Aerial I Vegetated Concave vations: or Present? Ye	magery (B Surface (es	d: check all that apply)	(B9) (except 4 4B) B13) (C1) along Living Roo ron (C4) in Tilled Soils (C6 ants (D1) (LRR A)		Andicators (2 or more required) -Stained Leaves (B9) (MLRA 1, 2, , and 4B) age Patterns (B10) eason Water Table (C2) tion Visible on Aerial Imagery (C9 orphic Position (D2) w Aquitard (D3) leutral Test (D5) d Ant Mounds (D6) (LRR A)
Verland Hyd rimary Indic Surface V High Wal Saturatio Water Ma Sedimen Drift Dep Algal Mal Iron Dep Surface S Inundatio Sparsely wield Observ face Wate faturation Pre	GY Irology Indicators: ators (minimum of o Water (A1) ter Table (A2) n (A3) arks (B1) t Deposits (B2) osits (B3) t or Crust (B4) osits (B5) Soil Cracks (B6) on Visible on Aerial I Vegetated Concave vations: or Present? Ye present? Ye	magery (B Surface (es es	d: check all that apply)	ticharce (B9) (except 4 4B) B13) (C1) is along Living Roo ron (C4) in Tilled Soils (C6 ants (D1) (LRR A) arks)		Ant Mounds (D6) (LRR A) Heave Hummocks (D7)
VDROLOG /etland Hyd rimary Indic Surface V High Wait Saturatio Water Ma Sedimen Drift Dep Algal Mait Iron Depa Surface S Inundatio Sparsely eld Observ vurface Water face Table F aturation Pro-	GY Irology Indicators: ators (minimum of o Water (A1) ter Table (A2) n (A3) arks (B1) t Deposits (B2) osits (B3) t or Crust (B4) osits (B5) Soil Cracks (B6) in Visible on Aerial I Vegetated Concave rations: or Present? Present? Ye esent? Ye ator State Soil Cracks (B6) Soil Cracks (B6) Note that the solution of the solution	magery (B Surface (es es	d: check all that apply)	the constant of the constant o	secondan <u>Secondan</u> <u>Water</u> <u>4A</u> <u>U</u> Draina <u>Dry-Se</u> <u>Satura</u> (C3) <u>C</u> Geom <u>Shallo</u> <u>Shallo</u> C Shallo C Shallo	Ant Mounds (D6) (LRR A) Heave Hummocks (D7)
YDROLOG Vetland Hyd Irimary Indic Surface V High Wal Saturatio Water Ma Saturatio Water Ma Surface S Inundatio Sparsely Vetla Observ Urface Wate Vater Table F aturation Pre-	GY Irology Indicators: ators (minimum of o Water (A1) ter Table (A2) n (A3) arks (B1) t Deposits (B2) osits (B3) t or Crust (B4) osits (B5) Soil Cracks (B6) in Visible on Aerial I Vegetated Concave rations: or Present? Present? Ye esent? Ye ator State Soil Cracks (B6) Soil Cracks (B6) Note that the solution of the solution	magery (B Surface (es es	d: check all that apply)	the constant of the constant o	secondan <u>Secondan</u> <u>Water</u> <u>4A</u> <u>U</u> Draina <u>Dry-Se</u> <u>Satura</u> (C3) <u>C</u> Geom <u>Shallo</u> <u>Shallo</u> C Shallo C Shallo	Ant Mounds (D6) (LRR A) Heave Hummocks (D7)
Vetland Hyd Irimary Indic Surface V High Wal Saturatio Water Ma Sedimen Drift Dep Algal Mal Iron Dep Surface S Inundatio Sparsely Vetland Hobserv urface Wate Ater Table F aturation Pre- ncludes capi escribe Rec	GY Irology Indicators: ators (minimum of o Water (A1) ter Table (A2) n (A3) arks (B1) t Deposits (B2) osits (B3) t or Crust (B4) osits (B5) Soil Cracks (B6) in Visible on Aerial I Vegetated Concave rations: or Present? Present? Ye esent? Ye ator State Soil Cracks (B6) Soil Cracks (B6) Note that the solution of the solution	magery (B Surface (es es	d: check all that apply)	there is the second sec	secondan <u>Secondan</u> <u>Water</u> <u>4A</u> <u>U</u> Draina Dry-Sa Dry-Sa Satura Stallo <u>Stallo</u> FAC-N <u>Raised</u> Frost- and Hydrology Pre f available:	A Indicators (2 or more required) -Stained Leaves (B9) (MILRA 1, 2, , and 4B) age Patterns (B10) eason Water Table (C2) ation Visible on Aerial Imagery (C9) orphic Position (D2) w Aquitard (D3) leutral Test (D5) d Ant Mounds (D6) (LRR A) Heave Hummocks (D7)
YDROLOG Vetland Hyd Primary Indic Surface V High Wald Saturatio Water Ma Sedimen Drift Dep Algal Mal Iron Dep Surface S Inundatio Sparsely Vater Table F naturation Pre-	GY Irology Indicators: ators (minimum of o Water (A1) ter Table (A2) n (A3) arks (B1) t Deposits (B2) osits (B3) t or Crust (B4) osits (B5) Soil Cracks (B6) in Visible on Aerial I Vegetated Concave rations: or Present? Present? Ye esent? Ye ator State Soil Cracks (B6) Soil Cracks (B6) Note that the solution of the solution	magery (B Surface (es es gauge, mo	d: check all that apply)	(B9) (except 4 4B) B13) (C1) along Living Roo ron (C4) in Tilled Soils (C6 ants (D1) (LRR A) arks) Wetla ous inspections), i	secondan <u>Secondan</u> <u>Water</u> <u>4A</u> <u>U</u> Draina Dry-Sa Dry-Sa Satura Stallo <u>Stallo</u> FAC-N <u>Raised</u> Frost- and Hydrology Pre f available:	And the second state of th
Vetland Hyd rimary Indic Surface V High Wal Saturatio Water Ma Sedimen Drift Dep Algal Mal Iron Dep Surface S Inundatio Sparsely Vetld Observ Unface Wate Vater Table F aturation Princiudes capi escribe Rec	GY Irology Indicators: ators (minimum of o Water (A1) ter Table (A2) n (A3) arks (B1) t Deposits (B2) osits (B3) t or Crust (B4) osits (B5) Soil Cracks (B6) in Visible on Aerial I Vegetated Concave rations: or Present? Present? Ye esent? Ye ator State Soil Cracks (B6) Soil Cracks (B6) Note that the solution of the solution	magery (B Surface (es es gauge, mo	d: check all that apply)	(B9) (except 4 4B) B13) (C1) along Living Roo ron (C4) in Tilled Soils (C6 ants (D1) (LRR A) arks) Wetla ous inspections), i	secondan <u>Secondan</u> <u>Water</u> <u>4A</u> <u>U</u> Draina Dry-Sa Dry-Sa Satura Stallo <u>Stallo</u> FAC-N <u>Raised</u> Frost- and Hydrology Pre f available:	Ant Mounds (D6) (LRR A) Heave Hummocks (D7)
Vetland Hyd rimary Indic Surface V High Wal Saturatio Water Ma Sedimen Drift Dep Algal Mal Iron Dep Surface S Inundatio Sparsely Vetld Observ Unface Wate Vater Table F aturation Princiudes capi escribe Rec	GY Irology Indicators: ators (minimum of o Water (A1) ter Table (A2) n (A3) arks (B1) t Deposits (B2) osits (B3) t or Crust (B4) osits (B5) Soil Cracks (B6) in Visible on Aerial I Vegetated Concave rations: or Present? Present? Ye esent? Ye ator State Soil Cracks (B6) Soil Cracks (B6) Note that the solution of the solution	magery (B Surface (es es gauge, mo	d: check all that apply)	(B9) (except 4 4B) B13) (C1) along Living Roo ron (C4) in Tilled Soils (C6 ants (D1) (LRR A) arks) Wetla ous inspections), i	secondan <u>Secondan</u> <u>Water</u> <u>4A</u> <u>U</u> Draina Dry-Sa Dry-Sa Satura Stallo <u>Stallo</u> FAC-N <u>Raised</u> Frost- and Hydrology Pre f available:	Ant Mounds (D6) (LRR A) Heave Hummocks (D7)

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

Project/Site: Marliana Elementary	city/county: Ed moud	5/Snohowigh Samplin	g Date: <u>7/7/15</u>
Applicant/Owner: Edwonds School Dist	higt		g Point: DP-Ce
Investigator(s): <u>S. Carbin (PWS) & B. O'neill (P</u>	245) Section, Township, Range:	5.36/TZ710/R4E	
Landform (hillslope, terrace, etc.): hillslope	Local relief (concave, conv	ex, none): Convex	Slope (%):
Subregion (LRR): L	at: Lor	ng:	Datum:
Soil Map Unit Name: Alderwood Gravelly Sandy Loan	m 15-30% slopes	NWI classification:	NIA
Are climatic / hydrologic conditions on the site typical for this tim	ne of year? Yes No	_ (If no, explain in Remarks.)	/
Are Vegetation, Soil, or Hydrology signif	ficantly disturbed? Are "Norm	nal Circumstances" present?	Yes No
Are Vegetation, Soil, or Hydrology natur	rally problematic? (If needed	d, explain any answers in Rem	arks.)
SUMMARY OF FINDINGS - Attach site map sho	owing sampling point locat	tions, transects, impor	tant features, etc.
Hydrophytic Vegetation Present? Yes <u>No</u> No	Is the Sampled Area	a 1/	

Hydric Soil Prese Wetland Hydrold	ent?	Yes	No	Is the Sampled Area within a Wetland?	Yes No	
Remarks:	14	supe wetland,	Welland	C		

VEGETATION - Use scientific names of plants.

<u>Tree Stratum</u> (Plot size; <u>30</u>) 1	Absolute % Cover	Dominant Indicator Species? Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC:
2 3 4		$\equiv \equiv$	Total Number of Dominant Species Across All Strata:(B) Percent of Dominant Species
Sapling/Shrub Stratum (Plot size: 15)		= Total Cover	That Are OBL, FACW, or FAC: (A/B)
1INRC	5	Y FAC	Prevalence Index worksheet: Total % Cover of:Multiply by:
2			OBL species x 1 =
3		·	FACW species x 2 =
5			FAC species x 3 =
5'	5	= Total Cover	FACU species x 4 = UPL species x 5 =
Herb Stratum (Plot size: 1. Lady Fein (Athyrium Filix femilia)	5	Y FAC	Column Totals: (A) (B)
2. Epilobium ciliatum 3. Solanum dulcamara	3	N FACW	Prevalence Index = B/A =
4. Bleeding Heart	-1-	Y FAC	Hydrophytic Vegetation Indicators:
5			1 - Rapid Test for Hydrophytic Vegetation 2 - Dominance Test is >50%
6			3 - Prevalence Index is $\leq 3.0^{1}$
7			4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
8			5 - Wetland Non-Vascular Plants ¹
10			Problematic Hydrophytic Vegetation ¹ (Explain)
11	-17		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Woody Vine Stratum (Plot size: 151)	16	= Total Cover	be present, unless disturbed of problematic.
1/			Hydrophytic
2	-mt		Vegetation
% Bare Ground in Herb Stratum		= Total Cover	Present? Yes No
Remarks:	1		

SOIL

Depth <u>Matrix</u> (inches) Color (moist) %		ox Features %	Type ¹	Loc ²	Texture	Remarks
0-5 104R2/1 10		-		1.00	loam	
5-14+ 10485/2 90	D 104R4/4	10	C	M	Qrav 1	Damy saud
2111 1010-10-10				<u> </u>	Q.C.	John
				<u> </u>		
		. <u> </u>	_			
				Sec. 1		Constant and the second second
Type: C=Concentration, D=Depletion	, RM=Reduced Matrix, C	S=Covered	or Coate	ed Sand Gr	ains. ² Lo	cation: PL=Pore Lining, M=Matrix.
ydric Soil Indicators: (Applicable t						ors for Problematic Hydric Soils ³ :
_ Histosol (A1)	Sandy Redox	(S5)			2 cr	n Muck (A10)
 Histic Epipedon (A2) 	Stripped Matri	and the second sec				Parent Material (TF2)
Black Histic (A3)	Loamy Mucky			t MLRA 1)		y Shallow Dark Surface (TF12)
Hydrogen Sulfide (A4)	1) Loamy Gleyed	- 10 - 10 - 10 - 10 - 10 - 10 - 10 - 10			Oth	er (Explain in Remarks)
_ Thick Dark Surface (A12)	Redox Dark S	And the second			³ Indicato	ors of hydrophytic vegetation and
Sandy Mucky Mineral (S1)	Depleted Dark		7)			nd hydrology must be present,
_ Sandy Gleyed Matrix (S4)	Redox Depres	sions (F8)			unles	s disturbed or problematic.
estrictive Layer (if present):						/
Туре:					Colore and	N N
Depth (inches):			-		Hydric Soil	Present? Yes No
emarks:						
Vetland Hydrology Indicators:		-				
Vetland Hydrology Indicators: rimary Indicators (minimum of one red	the second first the second second second second	Contraction of the second				ndary Indicators (2 or more required)
Vetland Hydrology Indicators: rimary Indicators (minimum of one red Surface Water (A1)	Water-St	ained Leave		xcept		Vater-Stained Leaves (B9) (MLRA 1, 2
Vetland Hydrology Indicators: rimary Indicators (minimum of one red Surface Water (A1) High Water Table (A2)	Water-Sta MLRA	ained Leave A 1, 2, 4A, ar		xcept	_ v	Vater-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B)
Vetland Hydrology Indicators: Primary Indicators (minimum of one real Surface Water (A1) High Water Table (A2) Saturation (A3)	Water-Str MLRA Salt Crus	ained Leave A 1, 2, 4A, ar t (B11)	nd 4B)	xcept	v	Vater-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Irainage Patterns (B10)
Vetland Hydrology Indicators: rimary Indicators (minimum of one rea Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1)	Water-Sta MLRA Salt Crus Aquatic In	ained Leaves A 1, 2, 4A, ar t (B11) nvertebrates	nd 4B) (B13)	xcept	v c	Vater-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Irainage Patterns (B10) Iry-Season Water Table (C2)
Vetland Hydrology Indicators: rimary Indicators (minimum of one red _ Surface Water (A1) _ High Water Table (A2) Saturation (A3) _ Water Marks (B1) _ Sediment Deposits (B2)	Water-Sta MLRA Salt Crus Aquatic In Hydroger	ained Leaves A 1, 2, 4A, ar t (B11) nvertebrates n Sulfide Odd	nd 4B) (B13) or (C1)		v c s	Vater-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Irainage Patterns (B10) Iry-Season Water Table (C2) iaturation Visible on Aerial Imagery (C3
Vetland Hydrology Indicators: trimary Indicators (minimum of one red Surface Water (A1) High Water Table (A2) < Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3)	Water-Sta MLRA Salt Crus Aquatic In Hydroger Oxidized	ained Leaves A 1, 2, 4A, ar t (B11) nvertebrates n Sulfide Odo Rhizosphere	nd 4B) (B13) or (C1) es along	Living Roo	V C C S ts (C3) G	Vater-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Irainage Patterns (B10) Iry-Season Water Table (C2) Iraturation Visible on Aerial Imagery (C3 Geomorphic Position (D2)
Vetland Hydrology Indicators: trimary Indicators (minimum of one red Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4)	Water-Sta MLRA Salt Crus Aquatic In Hydroger Oxidized Presence	ained Leaves A 1, 2, 4A, ar t (B11) nvertebrates n Sulfide Odd Rhizosphere o f Reduced	nd 4B) (B13) or (C1) es along d Iron (C4	Living Roo 4)		Vater-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Irainage Patterns (B10) Iry-Season Water Table (C2) Iaturation Visible on Aerial Imagery (C3 Geomorphic Position (D2) Inallow Aquitard (D3)
Vetland Hydrology Indicators: trimary Indicators (minimum of one red 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)	Water-Sta MLRA Salt Crus Aquatic In Hydroger Oxidized Presence Recent In	ained Leaves 1 , 2 , 4A , ar t (B11) nvertebrates n Sulfide Odd Rhizospheres e of Reduced on Reduction	nd 4B) (B13) or (C1) es along d Iron (C4 n in Tille	Living Roo 4) d Soils (C6		Vater-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Irainage Patterns (B10) Iry-Season Water Table (C2) Iraturation Visible on Aerial Imagery (C3 Geomorphic Position (D2)
Vetland Hydrology Indicators: trimary Indicators (minimum of one red Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4)	Water-Sta MLRA Salt Crus Aquatic In Hydroger Oxidized Presence Recent In Stunted o	ained Leaves A 1, 2, 4A, ar t (B11) nvertebrates n Sulfide Odd Rhizosphere o f Reduced	nd 4B) or (C1) es along d Iron (C4 n in Tille Plants (D	Living Roo 4) d Soils (C6		Vater-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Irainage Patterns (B10) Iry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C3 Seomorphic Position (D2) Ihallow Aquitard (D3) AC-Neutral Test (D5)
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Vetland Hydrology Indicators: Primary Indicators (minimum of one regovernance) 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 Image Sparsely Vegetated Concave Surfacted Concave Sur	Water-Sta MLRA Salt Crus Aquatic Ir Hydroger Oxidized Presence Recent Ir Stunted c ry (B7) Other (Ex ace (B8) No Depth (in No Depth (in	ained Leaves 1, 2, 4A, ar t (B11) nvertebrates n Sulfide Odd Rhizosphere e of Reduced on Reduction or Stressed F splain in Rem nches): nches):	And 4B) (B13) or (C1) es along d Iron (C4 n in Tille Plants (D narks) -fuce	Living Roo 4) d Soils (C6 1) (LRR A)		Vater-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Prainage Patterns (B10) hry-Season Water Table (C2) saturation Visible on Aerial Imagery (C3 Geomorphic Position (D2) shallow Aquitard (D3) AC-Neutral Test (D5) saised Ant Mounds (D6) (LRR A) rost-Heave Hummocks (D7)
Vetland Hydrology Indicators: trimary Indicators (minimum of one red 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 Image Sparsely Vegetated Concave Surfa ield Observations: urface Water Present? Yes Vater Table Present? Yes vater Table Present? Yes aturation Present? Yes cuddes capillary fringe) escribe Recorded Data (stream gaug	Water-Sta MLRA Salt Crus Aquatic Ir Hydroger Oxidized Presence Recent Ir Stunted c ry (B7) Other (Ex ace (B8) No Depth (in No Depth (in	ained Leaves 1, 2, 4A, ar t (B11) nvertebrates n Sulfide Odd Rhizosphere e of Reduced on Reduction or Stressed F splain in Rem nches): nches):	And 4B) (B13) or (C1) es along d Iron (C4 n in Tille Plants (D narks) -fuce	Living Roo 4) d Soils (C6 1) (LRR A)		Vater-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Prainage Patterns (B10) hry-Season Water Table (C2) saturation Visible on Aerial Imagery (C3 Geomorphic Position (D2) shallow Aquitard (D3) AC-Neutral Test (D5) saised Ant Mounds (D6) (LRR A) rost-Heave Hummocks (D7)
Vetland Hydrology Indicators: trimary Indicators (minimum of one red 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 Image Sparsely Vegetated Concave Surfa ield Observations: urface Water Present? Yes Vater Table Present? Yes vater Table Present? Yes aturation Present? Yes cuddes capillary fringe) escribe Recorded Data (stream gaug	Water-Sta MLRA Salt Crus Aquatic Ir Hydroger Oxidized Presence Recent Ir Stunted c ry (B7) Other (Ex ace (B8) No Depth (in No Depth (in	ained Leaves 1, 2, 4A, ar t (B11) nvertebrates n Sulfide Odd Rhizosphere e of Reduced on Reduction or Stressed F splain in Rem nches): nches):	And 4B) (B13) or (C1) es along d Iron (C4 n in Tille Plants (D narks) -fuce	Living Roo 4) d Soils (C6 1) (LRR A)		Vater-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Irainage Patterns (B10) Iry-Season Water Table (C2) inturation Visible on Aerial Imagery (C3 Geomorphic Position (D2) ihallow Aquitard (D3) AC-Neutral Test (D5) italsed Ant Mounds (D6) (LRR A) rost-Heave Hummocks (D7)

6

Sampling Point:

				Intains, Valleys, and Coast Region
			ity/County: Edu	Ion 05 Stohowigh Sampling Date: DP-5
pplicant/Owner: Edwonds		District		State: Sampling Point:
vestigator(s): 5. Corbin (PUS	B. Oneill	(PWS) s	ection, Township, Ra	ange: <u>536/ T27N/ 84 E</u>
andform (hillslope, terrace, etc.): 1	illslope		ocal relief (concave,	convex, none): Concave Slope (%): 30
ubregion (LRR):	1	Lat:	1	_ Long: Datum:
oil Map Unit Name: Alderwood	Urban Z	-0% Sl	nes /	NWI classification:
e climatic / hydrologic conditions on	the site typical for	this time of yea	r? Yes V No	(If no, explain in Remarks.)
				"Normal Circumstances" present? Yes No
e Vegetation, Soil, o				eeded, explain any answers in Remarks.)
			sampling point	locations, transects, important features, etc
Hydrophytic Vegetation Present?	Yes		Is the Sample	d Area
Hydric Soil Present?	Yes Yes		within a Wetla	No
Netland Hydrology Present? Remarks:	Tes		100001012 001120	
Verhanks.				
EGETATION – Use scientifi	c names of pl	ants.		
		Absolute	Dominant Indicator	Dominance Test worksheet:
ree Stratum (Plot size: <u>30</u>)	% Cover	Species? Status	Number of Dominant Species
. WRC		_15	N FAC	That Are OBL, FACW, or FAC: (A)
Dovy Fir			Y FACU	Total Number of Dominant
. Red Alder			Y FAC	Species Across All Strata: (B)
h		86	= Total Cover	Percent of Dominant Species 20%
Sapling/Shrub Stratum (Plot,size:	15 1	N	= Total Cover	That Are OBL, FACW, or FAC: (A/B)
1. Gualish Launel (Pri	unus hurocer	asis)45	Y M	Prevalence Index worksheet:
2. Oregon avail	1	5	N FACU	Total % Cover of: Multiply by: OBL species X1 = O
. Holly U'		3	N FACU	OBL species X1 = FACW species X2 =
h				FAC species 45 x3 = 135
i,	1			FACU species 93 x4= 372
lerb Stratum (Plot_size:5	1	53	= Total Cover	UPL species x 5 =
. Sword fem	/	40	Y FACU	Column Totals: 138 (A) 507 (B)
1 /1				Prevalence Index = B/A =
				Hydrophytic Vegetation Indicators:
				1 - Rapid Test for Hydrophytic Vegetation
		i		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)
0				¹ indicators of hydric soil and wetland hydrology must
1		46		be present, unless disturbed or problematic.
Voody Vine Stratum (Plot size:	15 1	-10-	Total Cover	
HBB		5	Y FACU	Hydrophytic
				Vegetation
No. 7000 7 60 70 4 5		5 -	Total Cover	Present? Yes No
6 Bare Ground in Herb Stratum				
A second s				
temarks:				

SOIL

Sampling Point: DP-5

Depth <u>Matrix</u> inches) Color (moist) %	Redox Features Color (moist) % Type	Loc ²	Taulur	Remarks
nches) <u>Color (moist) %</u>) - 7 - 7 - 5 (127.5/2 100	Color (moist) % Type			Remarks
phone and the second se		<u> </u>	-loom	Δ
2-14+7,54234 100			gnu loan	sand
ype: C=Concentration, D=Depletion, Rf		ated Sand Gra		PL=Pore Lining, M=Matrix.
ydric Soil Indicators: (Applicable to a	II LRRs, unless otherwise noted.)			Problematic Hydric Soils ³ :
_ Histosol (A1)	Sandy Redox (S5)		2 cm Muc	
_ Histic Epipedon (A2)	Stripped Matrix (S6)	MIDA 4		nt Material (TF2)
_ Black Histic (A3) _ Hydrogen Sulfide (A4)	Loamy Mucky Mineral (F1) (exce Loamy Gleyed Matrix (F2)	apt MLRA 1)		iow Dark Surface (TF12) plain in Remarks)
_ Depleted Below Dark Surface (A11)	Depleted Matrix (F3)			Jan II Konana)
_ Thick Dark Surface (A12)	Redox Dark Surface (F6)		³ Indicators of h	ydrophytic vegetation and
Sandy Mucky Mineral (S1)	Depleted Dark Surface (F7)			drology must be present,
Sandy Gleyed Matrix (S4)	Redox Depressions (F8)		unless distu	urbed or problematic.
estrictive Layer (if present):				
Туре:			1. V. S. M. P.	
Depth (inches):			Hydric Soil Prese	ent? Yes No V
DROLOGY Vetland Hydrology Indicators:			Casandaru	ediesters (0 ec mars conviced)
DROLOGY etland Hydrology Indicators: imary Indicators (minimum of one requir		(overst		ndicators (2 or more required)
DROLOGY etland Hydrology Indicators: imary Indicators (minimum of one requir _ Surface Water (A1)	Water-Stained Leaves (B9)		Water-S	Stained Leaves (B9) (MLRA 1, 2
DROLOGY etland Hydrology Indicators: imary Indicators (minimum of one requir _ Surface Water (A1) _ High Water Table (A2)	Water-Stained Leaves (B9) MLRA 1, 2, 4A, and 4B)		Water-5 4A, a	Stained Leaves (B9) (MLRA 1, 2 and 4B)
DROLOGY etland Hydrology Indicators: imary Indicators (minimum of one requir _ Surface Water (A1) _ High Water Table (A2) _ Saturation (A3)	Water-Stained Leaves (B9) MLRA 1, 2, 4A, and 4B) Salt Crust (B11)		Water-S 4A, a Drainag	Stained Leaves (B9) (MLRA 1, 2 and 4B) e Patterns (B10)
DROLOGY etland Hydrology Indicators: imary Indicators (minimum of one requir _ Surface Water (A1) _ High Water Table (A2) _ Saturation (A3) _ Water Marks (B1)	Water-Stained Leaves (B9) MLRA 1, 2, 4A, and 4B) Salt Crust (B11) Aquatic Invertebrates (B13)		Water-S 4A, i Drainag Dry-Sea	Stained Leaves (B9) (MLRA 1, 2 and 4 B) e Patterns (B10) ison Water Table (C2)
DROLOGY etland Hydrology Indicators: imary Indicators (minimum of one requir _ Surface Water (A1) _ High Water Table (A2) _ Saturation (A3) _ Water Marks (B1) _ Sediment Deposits (B2)	Water-Stained Leaves (B9) MLRA 1, 2, 4A, and 4B) Salt Crust (B11) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1)		Water-5 4A, a Drainag Dry-Sea Saturati	Stained Leaves (B9) (MLRA 1, 2 and 4B) e Patterns (B10) ason Water Table (C2) on Visible on Aerial Imagery (CS
DROLOGY etland Hydrology Indicators: imary Indicators (minimum of one requir _ Surface Water (A1) _ High Water Table (A2) _ Saturation (A3) _ Water Marks (B1) _ Sediment Deposits (B2) _ Drift Deposits (B3)	Water-Stained Leaves (B9) MLRA 1, 2, 4A, and 4B) Salt Crust (B11) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres alor	ng Living Roots	Water-5 4A, a Drainag Dry-Sea Saturati s (C3) Geomo	Stained Leaves (B9) (MLRA 1, 2 and 4B) e Patterns (B10) ason Water Table (C2) on Visible on Aerial Imagery (CS rphic Position (D2)
DROLOGY etland Hydrology Indicators: imary Indicators (minimum of one requir _ Surface Water (A1) _ High Water Table (A2) _ Saturation (A3) _ Water Marks (B1) _ Sediment Deposits (B2)	Water-Stained Leaves (B9) MLRA 1, 2, 4A, and 4B) Salt Crust (B11) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1)	ng Living Roots C4)	Water-S 4A, a Drainag Dry-Sea Saturati s (C3) Geomo Shallow	Stained Leaves (B9) (MLRA 1, 2 and 4B) e Patterns (B10) ason Water Table (C2) on Visible on Aerial Imagery (CS
DROLOGY etland Hydrology Indicators: imary Indicators (minimum of one requir _ Surface Water (A1) _ High Water Table (A2) _ Saturation (A3) _ Water Marks (B1) _ Sediment Deposits (B2) _ Drift Deposits (B3) _ Algal Mat or Crust (B4)	Water-Stained Leaves (B9) MLRA 1, 2, 4A, and 4B) Salt Crust (B11) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres alor Presence of Reduced Iron (ng Living Root C4) Ied Solls (C6)	Water-S 4A, a Drainag Dry-Sea Saturati s (C3) Geomo Shallow FAC-Ne	Stained Leaves (B9) (MLRA 1, 2 and 4B) e Patterns (B10) ason Water Table (C2) on Visible on Aerial Imagery (CS rphic Position (D2) Aquitard (D3)
DROLOGY etland Hydrology Indicators: imary Indicators (minimum of one requir 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)	Water-Stained Leaves (B9) MLRA 1, 2, 4A, and 4B) Salt Crust (B11) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres alor Presence of Reduced Iron (Recent Iron Reduction in Til Stunted or Stressed Plants	ng Living Root C4) Ied Solls (C6)	Water-S 4A, a Drainag Dry-Sea Saturati s (C3) Geomo Shallow FAC-Ne Raised	Stained Leaves (B9) (MLRA 1, 2 and 4B) e Patterns (B10) ason Water Table (C2) on Visible on Aerial Imagery (C9 rphic Position (D2) Aquitard (D3) eutral Test (D5)
DROLOGY etland Hydrology Indicators: imary Indicators (minimum of one requir _ 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)	Water-Stained Leaves (B9) MLRA 1, 2, 4A, and 4B) Salt Crust (B11) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres alor Presence of Reduced Iron (Recent Iron Reduction in Til Stunted or Stressed Plants Other (Explain in Remarks)	ng Living Root C4) Ied Solls (C6)	Water-S 4A, a Drainag Dry-Sea Saturati s (C3) Geomo Shallow FAC-Ne Raised	Stained Leaves (B9) (MLRA 1, 2 and 4B) e Patterns (B10) ason Water Table (C2) on Visible on Aerial Imagery (C9 rphic Position (D2) Aquitard (D3) eutral Test (D5) Ant Mounds (D6) (LRR A)
DROLOGY etland Hydrology Indicators: imary Indicators (minimum of one requir 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 (I Sparsely Vegetated Concave Surface	Water-Stained Leaves (B9) MLRA 1, 2, 4A, and 4B) Salt Crust (B11) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres alor Presence of Reduced Iron (Recent Iron Reduction in Til Stunted or Stressed Plants Other (Explain in Remarks)	ng Living Root C4) Ied Solls (C6)	Water-S 4A, a Drainag Dry-Sea Saturati s (C3) Geomo Shallow FAC-Ne Raised	Stained Leaves (B9) (MLRA 1, 2 and 4B) e Patterns (B10) ason Water Table (C2) on Visible on Aerial Imagery (C9 rphic Position (D2) Aquitard (D3) eutral Test (D5) Ant Mounds (D6) (LRR A)
DROLOGY etland Hydrology Indicators: imary Indicators (minimum of one requir 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 (Sparsely Vegetated Concave Surface eld Observations:	Water-Stained Leaves (B9) MLRA 1, 2, 4A, and 4B) Salt Crust (B11) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres alor Presence of Reduced Iron (Recent Iron Reduction in Til Stunted or Stressed Plants Other (Explain in Remarks)	ng Living Root C4) Ied Solls (C6)	Water-S 4A, a Drainag Dry-Sea Saturati s (C3) Geomo Shallow FAC-Ne Raised	Stained Leaves (B9) (MLRA 1, 2 and 4B) e Patterns (B10) ason Water Table (C2) on Visible on Aerial Imagery (CS rphic Position (D2) Aquitard (D3) eutral Test (D5) Ant Mounds (D6) (LRR A)
DROLOGY etland Hydrology Indicators: imary Indicators (minimum of one requir 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 (Sparsely Vegetated Concave Surface eld Observations: urface Water Present? Yes	Water-Stained Leaves (B9) MLRA 1, 2, 4A, and 4B) Salt Crust (B11) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres alor Presence of Reduced Iron (Recent Iron Reduction in Til Stunted or Stressed Plants To Other (Explain in Remarks) (B8)	ng Living Root C4) Ied Solls (C6)	Water-S 4A, a Drainag Dry-Sea Saturati s (C3) Geomo Shallow FAC-Ne Raised	Stained Leaves (B9) (MLRA 1, 2 and 4B) e Patterns (B10) ason Water Table (C2) on Visible on Aerial Imagery (C9 rphic Position (D2) Aquitard (D3) eutral Test (D5) Ant Mounds (D6) (LRR A)
DROLOGY International System International System 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 (Imageny Concave Surface Sparsely Vegetated Concave Surface Surface Water Present? Yes Alter Table Present? Yes	Water-Stained Leaves (B9) MLRA 1, 2, 4A, and 4B) Salt Crust (B11) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres alor Presence of Reduced Iron (Recent Iron Reduction in Til Stunted or Stressed Plants Stunted or Stressed Plants Other (Explain in Remarks) (B8)	Ig Living Roots C4) Ied Solis (C6) (D1) (LRR A)	Water-S 4A, a Drainag Dry-Sea Saturati s (C3) Geomo Shallow FAC-Ne Raised	Stained Leaves (B9) (MLRA 1, 2 and 4B) e Patterns (B10) ason Water Table (C2) on Visible on Aerial Imagery (C9 rphic Position (D2) Aquitard (D3) eutral Test (D5) Ant Mounds (D6) (LRR A) eave Hummocks (D7)
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 (I Sparsely Vegetated Concave Surface eld Observations: urface Water Present? Yes fater Table Present? Yes	Water-Stained Leaves (B9) MLRA 1, 2, 4A, and 4B) Salt Crust (B11) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres alor Presence of Reduced Iron (Recent Iron Reduction in Til Stunted or Stressed Plants Stunted or Stressed Plants) Other (Explain in Remarks) (B8) V Depth (inches): No Depth (inches): No Depth (inches): No Depth (inches): No Depth (inches):	Ig Living Roots C4) Iled Solis (C6) (D1) (LRR A)	Water-S 4A, a 4A, a Drainag Dry-Sea Saturati s (C3) Geomo Shallow FAC-Ne Raised Frost-H	Stained Leaves (B9) (MLRA 1, 2 and 4B) e Patterns (B10) ason Water Table (C2) on Visible on Aerial Imagery (C9 rphic Position (D2) Aquitard (D3) eutral Test (D5) Ant Mounds (D6) (LRR A) eave Hummocks (D7)
Zetland Hydrology Indicators: cimary Indicators (minimum of one requir 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 (Image Surface Surface eld Observations: urface Water Present? Yes aturation Present? Yes aturation Present? Yes	Water-Stained Leaves (B9) MLRA 1, 2, 4A, and 4B) Salt Crust (B11) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres alor Presence of Reduced Iron (Recent Iron Reduction in Til Stunted or Stressed Plants Stunted or Stressed Plants) Other (Explain in Remarks) (B8) V Depth (inches): No Depth (inches): No Depth (inches): No Depth (inches): No Depth (inches):	Ig Living Roots C4) Iled Solis (C6) (D1) (LRR A)	Water-S 4A, a 4A, a Drainag Dry-Sea Saturati s (C3) Geomo Shallow FAC-Ne Raised Frost-H	Stained Leaves (B9) (MLRA 1, 2 and 4B) e Patterns (B10) ason Water Table (C2) on Visible on Aerial Imagery (C9 rphic Position (D2) Aquitard (D3) eutral Test (D5) Ant Mounds (D6) (LRR A) eave Hummocks (D7)
DROLOGY International System International System 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 (I Sparsely Vegetated Concave Surface eld Observations: urface Water Present? Yes ater Table Present? Yes aturation Present? Yes Secribe Recorded Data (stream gauge, marked bata)	Water-Stained Leaves (B9) MLRA 1, 2, 4A, and 4B) Salt Crust (B11) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres alor Presence of Reduced Iron (Recent Iron Reduction in Til Stunted or Stressed Plants Stunted or Stressed Plants) Other (Explain in Remarks) (B8) V Depth (inches): No Depth (inches): No Depth (inches): No Depth (inches): No Depth (inches):	Ig Living Roots C4) Iled Solis (C6) (D1) (LRR A)	Water-S 4A, a 4A, a Drainag Dry-Sea Saturati s (C3) Geomo Shallow FAC-Ne Raised Frost-H	Stained Leaves (B9) (MLRA 1, 2 and 4B) e Patterns (B10) ason Water Table (C2) on Visible on Aerial Imagery (C9 rphic Position (D2) Aquitard (D3) eutral Test (D5) Ant Mounds (D6) (LRR A) eave Hummocks (D7)
DROLOGY etland Hydrology Indicators: imary Indicators (minimum of one requir _ 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 (I _ Sparsely Vegetated Concave Surface etd Observations: inface Water Present? Yes ater Table Present? Yes ater Table Present? Yes cludes capillary fringe) scoribe Recorded Data (stream gauge, m	Water-Stained Leaves (B9) MLRA 1, 2, 4A, and 4B) Salt Crust (B11) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres alor Presence of Reduced Iron (Recent Iron Reduction in Til Stunted or Stressed Plants Stunted or Stressed Plants) Other (Explain in Remarks) (B8) V Depth (inches): No Depth (inches): No Depth (inches): No Depth (inches): No Depth (inches):	Ig Living Roots C4) Iled Solis (C6) (D1) (LRR A)	Water-S 4A, a 4A, a Drainag Dry-Sea Saturati s (C3) Geomo Shallow FAC-Ne Raised Frost-H	Stained Leaves (B9) (MLRA 1, 2 and 4B) e Patterns (B10) ason Water Table (C2) on Visible on Aerial Imagery (C9 rphic Position (D2) Aquitard (D3) eutral Test (D5) Ant Mounds (D6) (LRR A) eave Hummocks (D7)

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

Project/Site: Madrona Elementary	City/County: <u>Edmands / Snothamish</u>	_ Sampling Date: <u></u>
Applicant/Owner: <u>Eclmonds School</u> Dist	Not State: INA	_ Sampling Point: <u>7/7//S</u>
Investigator(s): S. Cordain (PWS) = B. Oheill (Pr	NS) Section, Township, Range: 536/7	2.7N/R4E
Landform (hillslope, terrace, etc.):	Local relief (concave, convex, none):	naire Slope (%):
a start a Bratt (an in the start a sta	Lat: Long:	Datum:
Soil Map Unit Name: Alderwood Urban 2-9	NWI class	ification: N/A
Are climatic / hydrologic conditions on the site typical for this ti	me of year? Yes No (If no, explain ir	Remarks.)
Are Vegetation, Soil, or Hydrology sign	nificantly disturbed? Are "Normal Circumstances	" present? Yes No
Are Vegetation, Soil, or Hydrology nat	urally problematic? (If heeded, explain any ans	wers in Remarks.)
SUMMARY OF FINDINGS – Attach site map sh	nowing sampling point locations, transec	ts, important features, etc.
Hydrophytic Vegetation Present? Yes No	VI	/
Hydric Soil Present? Yes No	Is the Sampled Area	No
Wetland Hydrology Present? Yes No	within a Wetland? Yes	No
Remarks: Near Wetland B		
Japan becauting D		

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: <u>30</u>) 1. \NRC	Absolute <u>% Cover</u> 96	Dominant Indicator Species? Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: (A)
2. Red Alder 3.	20	N FAG	Total Number of Dominant Species Across All Strata:(B)
4	110	_= Total Cover	Percent of Dominant Species That Are OBL, FACW, or FAC: (A/B)
1/			Prevalence Index worksheet:
2	_		Total % Cover of:Multiply by: OBL species x 1 =
3	_		FACW species \bigcirc $x^{2} = \bigcirc$
4			FAC species 110 x3 = 330
5	- tot		FACU species $3 \times 4 = 12$
Herb Stratum (Plot size: 5)	Y	= Total Cover	UPL species x 5 =
1	1		Column Totals: 113 (A) 342 (B)
2			Prevalence Index = $B/A = 3.03$
3			Hydrophytic Vegetation Indicators:
4	_		1 - Rapid Test for Hydrophytic Vegetation
5	_		2 - Dominance Test is >50%
6			3 - Prevalence Index is ≤3.0 ¹
7		·	4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
8	-		5 - Wetland Non-Vascular Plants ¹
9		·	Problematic Hydrophytic Vegetation ¹ (Explain)
10	/		¹ Indicators of hydric soil and wetland hydrology must
		= Total Cover	be present, unless disturbed or problematic.
Woody Vine Stratum (Plot size: 15)	1	V FACIN	/
1. IV (Herenhelix)	5	1 1900	Hydrophytic
2			Vegetation Ves No
% Bare Ground in Herb Stratum	3	= Total Cover	
Remarks:			

1.9

SOIL

		Sec. 24
		NP-L
Sampling	Doint	Dr

Depth	Matrix		Redo	x Features				
(inches)	Color (moist)	% 100	Color (moist)	_%	Type ¹	Loc ²	Texture	Remarks
7-11-6			ToNDUL	20		NA	lan	0
3-16+	104R414	80	10724/10	20	<u> </u>	1-1	loum	Sand
				_	<u></u>			
		-						
			-	_	_			
T 0.0			-				- 2	(10.0) at a 10.19 (0.11.10.0)
	ncentration, D=Deple ndicators: (Applica					ed Sand Gr		cation: PL=Pore Lining, M=Matrix. ors for Problematic Hydric Solis ³ :
Histosol		bie to an	Sandy Redox (S		eu./			m Muck (A10)
and the second se	ipedon (A2)		Stripped Matrix					Parent Material (TF2)
Black His			Loamy Mucky M	7 M 1 1 1 1 1 1 1 1 1 1) (except	MLRA 1)		y Shallow Dark Surface (TF12)
	n Sulfide (A4)		Loamy Gleyed I	Matrix (F2)		Oth	er (Explain in Remarks)
	Below Dark Surface	(A11)	Depleted Matrix	and the second s				
	rk Surface (A12)		Redox Dark Sur		7)			ors of hydrophytic vegetation and
	ucky Mineral (S1) leyed Matrix (S4)		Depleted Dark S Redox Depress		()			nd hydrology must be present, s disturbed or problematic.
and the second se	ayer (if present):				-			a distanced of problematic.
Type:							1. No. 11	1/
Depth (inc	hes):						Hydric Soil	Present? Yes No
	rology Indicators:	a raquirad	t check all that apply			-	Seco	adapu Indicatora (2 ar mara required)
Vetland Hyd Primary Indic Surface \ High Wat Saturatio	irology Indicators: ators (minimum of on Water (A1) ter Table (A2) n (A3)	e required	Water-Stain MLRA	ned Leave 1 , 2, 4A, a 1611)	nd 4B)	xcept	_ v Žc	ndary Indicators (2 or more required) Vater-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) Prainage Patterns (B10)
Vetland Hyd Primary Indic Surface \ High Wat Saturatio Water Ma	irology Indicators: ators (minimum of on Nater (A1) ler Table (A2) n (A3) arks (B1)	e required	Water-Stail MLRA Salt Crust Aquatic Inv	ned Leave I, 2, 4A, a B11) ertebrates	and 4B) s (B13)	xcept	v z	Vater-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) Irrainage Patterns (B10) Irry-Season Water Table (C2)
Vetland Hyd Primary Indic Surface V High Wat Saturatio Water Ma Sedimen	Irology Indicators: <u>ators (minimum of on</u> Nater (A1) ter Table (A2) n (A3) arks (B1) t Deposits (B2)	e required	Water-Stain MLRA Salt Crust Aquatic Inv Hydrogen S	ned Leave I, 2, 4A, a B11) ertebrates Sulfide Od	nd 4B) s (B13) lor (C1)		v 	Vater-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) Irrainage Patterns (B10) Irry-Season Water Table (C2) iaturation Visible on Aerial Imagery (C9)
Vetland Hyd Primary Indic Surface V High Wat Saturatio Water Ma Sedimen Drift Dep	ators (minimum of on Nater (A1) ter Table (A2) n (A3) arks (B1) t Deposits (B2) osits (B3)	e required	Water-Stail MLRA Salt Crust Aquatic Inv Hydrogen S Oxidized R	ned Leave I, 2, 4A, a B11) ertebrates Sulfide Od hizospher	nd 4B) s (B13) lor (C1) res along	Living Roo	۷ ۷ ۵ ۵ ts (C3) 6	Vater-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) brainage Patterns (B10) bry-Season Water Table (C2) saturation Visible on Aerial Imagery (C9) seomorphic Position (D2)
Vetland Hyd Primary Indic Surface N High Wal Saturatio Water Ma Sedimen Drift Dep Algal Mal	Irology Indicators: ators (minimum of on Water (A1) ter Table (A2) n (A3) arks (B1) t Deposits (B2) osits (B3) t or Crust (B4)	e required	Water-Stain MLRA Salt Crust Aquatic Inv Hydrogen S Oxidized R Presence o	ned Leave I, 2, 4A, a B11) ertebrates Sulfide Od hizospher if Reduce	nd 4B) s (B13) lor (C1) res along d Iron (C4	Living Roo	V C S S S	Vater-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) prainage Patterns (B10) bry-Season Water Table (C2) aturation Visible on Aerial Imagery (C9) seomorphic Position (D2) hallow Aquitard (D3)
Vetland Hyd Primary Indic Surface V High Wal Saturatio Water Ma Sedimen Drift Dep Algal Mal Iron Depo	Irology Indicators: ators (minimum of on Water (A1) ter Table (A2) n (A3) arks (B1) t Deposits (B2) osits (B3) t or Crust (B4) osits (B5)	e required	Water-Stain MLRA * Salt Crust (Aquatic Inv Hydrogen S Oxidized R Presence c Recent Iror	ned Leave I, 2, 4A, a B11) ertebrates Sulfide Od hizospher f Reduces n Reduction	nd 4B) s (B13) lor (C1) es along d Iron (C4 on in Tilled	Living Roo I) d Soils (C6		Vater-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) prainage Patterns (B10) pry-Season Water Table (C2) aturation Visible on Aerial Imagery (C9) seomorphic Position (D2) hallow Aquitard (D3) AC-Neutral Test (D5)
Vetland Hyd Primary Indic Surface V High Wal Saturatio Water Ma Sedimen Sedimen Drift Dep Algal Mal Iron Depo Surface S	Irology Indicators: ators (minimum of on Water (A1) ter Table (A2) n (A3) arks (B1) t Deposits (B2) osits (B3) t or Crust (B4)		Water-Stair MLRA * Salt Crust (Aquatic Inv Hydrogen S Oxidized R Presence c Recent Iror Stunted or	ned Leave I, 2, 4A, a B11) ertebrates Sulfide Od hizospher of Reduce n Reductio Stressed	nd 4B) s (B13) lor (C1) res along d Iron (C4 on in Tilleo Plants (D	Living Roo I) d Soils (C6		Vater-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) prainage Patterns (B10) bry-Season Water Table (C2) aturation Visible on Aerial Imagery (C9) seomorphic Position (D2) hallow Aquitard (D3)
Vetland Hyd Primary Indic Surface V High Wat Saturatio Water Ma Sedimen Drift Dep Algal Mat Iron Dep Surface S Inundatio	ators (minimum of on Nater (A1) ter Table (A2) n (A3) arks (B1) t Deposits (B2) osits (B3) t or Crust (B4) osits (B5) Soil Cracks (B6)	agery (B ²	Water-Stail MLRA 1 Salt Crust (Aquatic Inv Hydrogen S Oxidized R Presence o Recent Iror Stunted or Other (Exp	ned Leave I, 2, 4A, a B11) ertebrates Sulfide Od hizospher of Reduce n Reductio Stressed	nd 4B) s (B13) lor (C1) res along d Iron (C4 on in Tilleo Plants (D	Living Roo I) d Soils (C6		Vater-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) Prainage Patterns (B10) Pry-Season Water Table (C2) aturation Visible on Aerial Imagery (C9) Geomorphic Position (D2) hallow Aquitard (D3) AC-Neutral Test (D5) taised Ant Mounds (D6) (LRR A)
Vetland Hyd Primary Indic Surface V High Wat Saturatio Water Ma Sedimen Drift Dep Algal Mat Iron Dep Surface S Inundatio	ators (minimum of on Nater (A1) ter Table (A2) n (A3) arks (B1) t Deposits (B2) osits (B3) t or Crust (B4) osits (B5) Soil Cracks (B6) n Visible on Aerial Im Vegetated Concave 3	agery (B ²	Water-Stail MLRA 1 Salt Crust (Aquatic Inv Hydrogen S Oxidized R Presence o Recent Iror Stunted or Other (Exp	ned Leave I, 2, 4A, a B11) ertebrates Sulfide Od hizospher of Reduce n Reductio Stressed	nd 4B) s (B13) lor (C1) res along d Iron (C4 on in Tilleo Plants (D	Living Roo I) d Soils (C6		Vater-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) Prainage Patterns (B10) Pry-Season Water Table (C2) aturation Visible on Aerial Imagery (C9) Geomorphic Position (D2) hallow Aquitard (D3) AC-Neutral Test (D5) taised Ant Mounds (D6) (LRR A)
Vetland Hyd Primary Indic Surface V High Wat Saturatio Water Ma Sedimen Drift Dep Algal Mal Iron Dep Surface S Inundatio Sparsely	Arology Indicators: ators (minimum of on Water (A1) ter Table (A2) n (A3) arks (B1) t Deposits (B2) osits (B3) t or Crust (B4) osits (B5) Soil Cracks (B6) n Visible on Aerial Im Vegetated Concave : ations:	agery (B3 Surface (F	Water-Stail MLRA 1 Salt Crust (Aquatic Inv Hydrogen S Oxidized R Presence o Recent Iror Stunted or Other (Exp	ned Leave (, 2, 4A, a (B11) ertebrates Sulfide Od hizospher of Reduced Reduced Reduction Stressed lain in Ref	nd 4B) s (B13) lor (C1) res along d Iron (C4 on in Tilleo Plants (D	Living Roo I) d Soils (C6		Vater-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) Prainage Patterns (B10) Pry-Season Water Table (C2) aturation Visible on Aerial Imagery (C9) Geomorphic Position (D2) hallow Aquitard (D3) AC-Neutral Test (D5) taised Ant Mounds (D6) (LRR A)
Vetland Hyd Primary Indic Surface N High Wat Saturatio Water Ma Sedimen Drift Dep Algal Mat Iron Depo Surface S Inundatio Sparsely Vield Observ	Irology Indicators: ators (minimum of on Water (A1) ter Table (A2) n (A3) arks (B1) t Deposits (B2) osits (B3) t or Crust (B4) osits (B5) Soil Cracks (B6) n Visible on Aerial Im Vegetated Concave S ations: r Present? Yes	agery (B3 Surface (B	Water-Stail MLRA 1 Salt Crust (Aquatic Inv Hydrogen S Oxidized R Presence c Recent Iror Stunted or Other (Exp 38)	hed Leave (, 2, 4A, a (B11) ertebrates Sulfide Od hizospher of Reduce (Stressed lain in Res (Bain in Res):	nd 4B) s (B13) lor (C1) res along d Iron (C4 on in Tilleo Plants (D	Living Roo I) d Soils (C6		Vater-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) Prainage Patterns (B10) Pry-Season Water Table (C2) aturation Visible on Aerial Imagery (C9) Geomorphic Position (D2) hallow Aquitard (D3) AC-Neutral Test (D5) taised Ant Mounds (D6) (LRR A)
Vetland Hyd Primary Indic Surface V High Wal Saturatio Water Ma Sedimen Drift Dep Algal Mal Iron Dep Surface S Inundatio Sparsely Varface Wate	Irology Indicators: ators (minimum of on Water (A1) ter Table (A2) n (A3) arks (B1) t Deposits (B2) osits (B3) t or Crust (B4) osits (B5) Soil Cracks (B6) n Visible on Aerial Im Vegetated Concave 3 ations: r Present? Yes present? Yes	agery (B3 Surface (B s 1 s 1	Water-Stail MLRA 1 Salt Crust (Aquatic Inv Hydrogen S Oxidized R Presence c Recent Iror Stunted or Other (Exp 38)	hed Leave (, 2, 4A, a (B11) ertebrates Sulfide Od hizospher of Reduce of R	nd 4B) s (B13) lor (C1) res along d Iron (C4 on in Tilleo Plants (D	Living Roo 4) d Soils (C6 1) (LRR A)		Vater-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) brainage Patterns (B10) bry-Season Water Table (C2) auturation Visible on Aerial Imagery (C9) beomorphic Position (D2) hallow Aquitard (D3) AC-Neutral Test (D5) taised Ant Mounds (D6) (LRR A) rost-Heave Hummocks (D7)
Vetland Hyd Primary Indic Surface V High Wal Saturatio Water Ma Sedimen Drift Dep Algal Mal Iron Dep Surface S Inundatio Sparsely Vater Table F Saturation Pro ncludes capi	Irology Indicators: ators (minimum of on Water (A1) ter Table (A2) n (A3) arks (B1) t Deposits (B2) osits (B3) t or Crust (B4) osits (B5) Soil Cracks (B6) n Visible on Aerial Im Vegetated Concave 3 ations: r Present? Yes present? Yes	agery (B3 Surface (F s 1 s 1	Water-Stail MLRA Salt Crust (Aquatic Inv Aquatic Inv Hydrogen S Oxidized R Presence c Recent Iror Stunted or Other (Exp 38) No Depth (inc No Depth (inc	hed Leave (, 2, 4A, a (B11) ertebrates Sulfide Od hizospher of Reduced Reductio Stressed (ain in Reso (Stressed) (ain in Reso) (All (All (Stressed)) (All (Stre	nd 4B) s (B13) lor (C1) res along d Iron (C4 on in Tilleo Plants (D marks)	Living Roo () d Soils (C6 1) (LRR A)	Ls (C3) F	Vater-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) brainage Patterns (B10) bry-Season Water Table (C2) auturation Visible on Aerial Imagery (C9) beomorphic Position (D2) hallow Aquitard (D3) AC-Neutral Test (D5) taised Ant Mounds (D6) (LRR A) rost-Heave Hummocks (D7)
Vetland Hyd Primary Indic Surface V High Wal Saturatio Water Ma Sedimen Drift Dep Algal Mal Iron Dep Surface S Inundatio Sparsely Vater Table F Saturation Pro ncludes capi	Irology Indicators: ators (minimum of on Water (A1) ter Table (A2) n (A3) arks (B1) t Deposits (B2) osits (B3) t or Crust (B4) osits (B5) Soil Cracks (B6) n Visible on Aerial Im Vegetated Concave S ations: r Present? Yes esent? Yes llary fringe)	agery (B3 Surface (F s 1 s 1	Water-Stail MLRA Salt Crust (Aquatic Inv Aquatic Inv Hydrogen S Oxidized R Presence c Recent Iror Stunted or Other (Exp 38) No Depth (inc No Depth (inc	hed Leave (, 2, 4A, a (B11) ertebrates Sulfide Od hizospher of Reduced Reductio Stressed (ain in Reso (Stressed) (ain in Reso) (All (All (Stressed)) (All (Stre	nd 4B) s (B13) lor (C1) res along d Iron (C4 on in Tilleo Plants (D marks)	Living Roo () d Soils (C6 1) (LRR A)	Ls (C3) F	Vater-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) brainage Patterns (B10) bry-Season Water Table (C2) auturation Visible on Aerial Imagery (C9) beomorphic Position (D2) hallow Aquitard (D3) AC-Neutral Test (D5) taised Ant Mounds (D6) (LRR A) rost-Heave Hummocks (D7)
Vetland Hyd Primary Indic Surface V High Wal Saturatio Water Ma Sedimen Drift Dep Algal Mal Iron Dep Surface S Inundatio Sparsely Vater Table F Saturation Pro ncludes capi	Irology Indicators: ators (minimum of on Water (A1) ter Table (A2) n (A3) arks (B1) t Deposits (B2) osits (B3) t or Crust (B4) osits (B5) Soil Cracks (B6) n Visible on Aerial Im Vegetated Concave S ations: r Present? Yes esent? Yes llary fringe)	agery (B3 Surface (F s 1 s 1	Water-Stail MLRA Salt Crust (Aquatic Inv Aquatic Inv Hydrogen S Oxidized R Presence c Recent Iror Stunted or Other (Exp 38) No Depth (inc No Depth (inc	hed Leave (, 2, 4A, a (B11) ertebrates Sulfide Od hizospher of Reduced Reductio Stressed (ain in Reso (Stressed) (ain in Reso) (All (All (Stressed)) (All (Stre	nd 4B) s (B13) lor (C1) res along d Iron (C4 on in Tilleo Plants (D marks)	Living Roo () d Soils (C6 1) (LRR A)	Ls (C3) F	Vater-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) brainage Patterns (B10) bry-Season Water Table (C2) auturation Visible on Aerial Imagery (C9) beomorphic Position (D2) hallow Aquitard (D3) AC-Neutral Test (D5) taised Ant Mounds (D6) (LRR A) rost-Heave Hummocks (D7)
Vetland Hyd Primary Indic Surface V High Wal Saturatio Water Ma Sedimen Drift Dep Algal Mal Iron Dep Surface S Inundatio Sparsely Surface Water Vater Table F Saturation Pri ncludes capi Describe Rec	Irology Indicators: ators (minimum of on Water (A1) ter Table (A2) In (A3) arks (B1) t Deposits (B2) posits (B3) t or Crust (B4) posits (B5) Soil Cracks (B6) In Visible on Aerial Im Vegetated Concave S ations: r Present? Yes Present? Yes esent? Yes esent? Yes llary fringe) orded Data (stream g	agery (B3 Surface (F s 1 s 1	Water-Stail MLRA Salt Crust (Aquatic Inv Aquatic Inv Hydrogen S Oxidized R Presence c Recent Iror Stunted or Other (Exp 38) No Depth (inc No Depth (inc	hed Leave (, 2, 4A, a (B11) ertebrates Sulfide Od hizospher of Reduced Reductio Stressed (ain in Reso (Stressed) (ain in Reso) (All (All (Stressed)) (All (Stre	nd 4B) s (B13) lor (C1) res along d Iron (C4 on in Tilleo Plants (D marks)	Living Roo () d Soils (C6 1) (LRR A)	Ls (C3) F	Vater-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) brainage Patterns (B10) bry-Season Water Table (C2) auturation Visible on Aerial Imagery (C9) beomorphic Position (D2) hallow Aquitard (D3) AC-Neutral Test (D5) taised Ant Mounds (D6) (LRR A) rost-Heave Hummocks (D7)

WETLAND DETERMINATION DAT	TA FORM	1 – Wes	tern Mou	ntains, Valleys, and Coast Region
Project/Site: Madvona Elementar	i .	ity/Count	yEdma	onds/Sudnowish Sampling Date: DR-7
Applicant/Owner: Edmonds School DA		1969 1		State: <u>WA</u> Sampling Point: <u>717/15</u>
Investigator(s): Scorbin (PWS) B. O'neil				
Landform (hillslope, terrace, etc.): <u>MINSTRE</u>	I	_ocal relie	ef (concave, o	convex, none): <u>CONVEX</u> Slope (%): <u>2 ; [</u>
Subregion (LRR):	Lat:	-		_ Long: Datym:
Soil Map Unit Name Alderwisson and elly a	<u>sandy l</u>	Oam	<u>15-3</u>	<u>07. St</u> NWI classification: <u>PIA</u>
Are climatic / hydrologic conditions on the site typical for this	time of yea	r?Yes_	<u>/ No _</u>	(If no, explain in Remarks.)
Are Vegetation, Soil, or Hydrology sig	gnificantly d	isturbed?	Are "	Normal Circumstances" present? Yes 🔽 No
Are Vegetation, Soil, or Hydrology na	aturally prob	ematic?	(If ne	eded, explain any answers in Remarks.)
SUMMARY OF FINDINGS – Attach site map s	howing	samplir	ng point le	ocations, transects, important features, etc.
Hydric Soil Present? Yes V	۶ <u></u>		he Sampled hin a Wetlan	
VEGETATION – Use scientific names of plant	s.			
2.0			t Indicator	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC:
2 3				Total Number of Dominant
4	<u></u>			Percent of Dominant Species
Sapling/Shrub Stratum (Plot size:	\rightarrow	= Total Co	over	That Are OBL, FACW, or FAC: (A/B)
1. Galmonlaerry (Rubus spectrabilis)	25	<u> Y </u>	FAC	Prevalence Index worksheet: Total % Cover of:Multiply by:
2. English Jabre (Prunis laurocerasus)	<u>10</u>	<u> </u>		OBL species x1 =
3. Klounthin Ash (Sorbus sitchensis)	<u>10</u>		FAC	FACW species x 2 =
4. Hazlenot			- 1200	FAC species x 3 =
0	-70	= Total Co	over	FACU species x 4 =
Herb Stratum (Plot size:)		\/	FAC	UPL species x 5 =
1. Lady Sern	60	<u> </u>	PAC PAUL	Column Totals: (A) (B)
2. <u>Redding hoart</u> 3. Her to Robert		<u>-N</u> -	TAU FALL	Prevalence Index = B/A =
		<u> </u>	FAW	Hydrophytic Vegetation Indicators:
4 5				1 - Rapid Test for Hydrophytic Vegetation 2 - Dominance Test is >50%
6				3 - Prevalence Index is $\leq 3.0^{1}$
7				4 - Morphological Adaptations ¹ (Provide supporting
8			- <u> </u>	data in Remarks or on a separate sheet)
9				5 - Wetland Non-Vascular Plants ¹
10				Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must
11	66	= Total Co		be present, unless disturbed or problematic.
Woody Vine Stratum (Plot size: 15')	<u> </u>	- Total Co		l l
1. <u>HBB</u>	5	p	FACU	Hydrophytic
2				Vegetation Present? Yes No
% Bare Ground in Herb Stratum	<u></u>	= Total Co	over	······································
Remarks:				

SOIL

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	crintion: /Decerite	to the day	th needed to docu	nont the	Indicator	orconfirm	the abcorr	Sampling Point: 201
		to the dep				or contirm	n the absent	e of Indicators.)
Depth (inches)	Matrix Color (moist)	%	Color (moist)	x Feature %	s Type ¹	Loc ²	Texture	Remarks
3-5	1048 2/1	100			_JJRS_		1000M	
-11.1	10112=12	02	Master Hiles	-7	-	T		
stlet	101070	- 10	1010-110	1		1-1-	Saud	
				-	_	\equiv		
		_			_	-	_	
			Reduced Matrix, CS			d Sand Gr		- ocation: PL=Pore Lining, M=Matrix.
	States and states of the state	cable to all	LRRs, unless othe	rwise not	ed.)			tors for Problematic Hydric Soils ³ :
_ Histosol			Sandy Redox (cm Muck (A10)
	pipedon (A2)		Stripped Matrix					ed Parent Material (TF2)
	istic (A3) an Sulfide (A4)		Loamy Mucky M			MLRA 1)		ery Shallow Dark Surface (TF12)
	d Below Dark Surfac	o (A11)	Loamy Gleyed		.)		_ 0	her (Explain in Remarks)
the second s	ark Surface (A12)		Redox Dark Su				³ Indica	tors of hydrophytic vegetation and
	Aucky Mineral (S1)		Depleted Dark					land hydrology must be present,
	Gleyed Matrix (S4)		Redox Depress		~			ess disturbed or problematic.
	Layer (if present):					_		-/
Type:							1.11.1.2	. /
Depth (in	ches):						Hydric So	ll Present? Yes No
emarks:							1.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4	
YDROLO	GY							
	Contraction of the second s					10		
Vetland Hy	drology Indicators		t: check all that appl	v)			Sec	ondary Indicators (2 or more required)
Vetland Hy Primary Indie	drology Indicators cators (minimum of e		<u>I: check all that appl</u> Water-Sta		es (B9) (e	xcept		ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MI RA 1, 2
Vetland Hy Primary India Surface	drology Indicators cators (minimum of o Water (A1)		Water-Sta	ined Leave	1	xcept		Water-Stained Leaves (B9) (MLRA 1, 2,
Vetland Hy Primary India Surface High Wa	drology Indicators cators (minimum of e Water (A1) ater Table (A2)		Water-Sta MLRA	ined Leav 1, 2, 4A, a	1	xcept		Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B)
Vetland Hy Primary India Surface High Wa Saturatio	drology Indicators cators (minimum of e Water (A1) ater Table (A2) on (A3)		Water-Sta MLRA Salt Crust	ined Leav 1, 2, 4A, a (B11)	and 4B)	xcept	Ē	Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10)
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US Army Corps of Engineers

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APPENDIX C

WETLAND RATING FORMS – WESTERN WASHINGTON

RATING SUMMARY – Western Washington

 Name of wetland (or ID #): Wetland A
 Date of site visit: 7/6 and 7/7/15

 Rated by S. Corbin (PWS)
 Trained by Ecology? X Yes No Date of training 10/09 and 5/14

HGM Class used for rating <u>Slope</u> Wetland has multiple HGM classes? Y X N

NOTE: Form is not complete without the figures requested (figures can be combined). Source of base aerial photo/map <u>Google Earth</u>

OVERALL WETLAND CATEGORY <u>IV</u> (based on functions <u>X</u> 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					
			_		Circle	the ap	propr	iate ra	itings	
Site Potential	Н	Μ	(L)	Н	Μ		Н	Μ		
Landscape Potential	Н	M	Ľ	Н	Μ		Н	Μ	L	
Value	Н	M	L	Н	M	L	Н	M	L	TOTAL
Score Based on					4					
Ratings		5			4			4		13

Score for each function based on three ratings (order of ratings is not important) 9 = H,H,H

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

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	H 2.1, H 2.2, H 2.3	
polygons for accessible habitat and undisturbed habitat		
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	Н 1.1, Н 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	1
Hydroperiods	H 1.2	1
Plant cover of dense trees, shrubs, and herbaceous plants	S 1.3	1
Plant cover of dense, rigid trees, shrubs, and herbaceous plants	S 4.1	1
(can be added to figure above)		1
Boundary of 150 ft buffer (can be added to another figure)	S 2.1, S 5.1	1
1 km Polygon: Area that extends 1 km from entire wetland edge - including	H 2.1, H 2.2, H 2.3	
polygons for accessible habitat and undisturbed habitat		2
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	3
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	S 3.3	4

Wetland Rating System for Western WA: 2014 Update Rating Form – Effective January 1, 2015

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) 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.

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?
 - <u>X</u> The wetland is on a slope (*slope can be very gradual*),
 - <u>X</u> 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,
 - 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).

- 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 <u>A</u>

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

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

SLOPE WETLANDS	
Water Quality Functions - Indicators that the site functions to improve water quality	
S 1.0. Does the site have the potential to improve water quality?	
S 1.1. Characteristics of the average slope of the wetland: (a 1% slope has a 1 ft vertical drop 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	0
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 Dense, uncut, herbaceous plants > ½ of area Dense, woody, plants > ½ of area Dense, uncut, herbaceous plants > ¼ of area Dense, uncut, herbaceous plants > ¼ of area Does not meet any of the criteria above for plants 	2
Total for S 1Add the points in the boxes above	2
Rating of Site Potential If score is: 12 = H 6-11 = M X_0-5 = L Record the rating on S 2.0. Does the landscape have the potential to support the water quality function of the site?	the first page
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 <u>dog walkers/ dog poop</u> Yes = 1 No = 0	1
Total for S 2Add the points in the boxes above	2
Rating of Landscape Potential If score is: X 1-2 = M0 = L Record the rating on	the first page
S 3.0. Is the water quality improvement provided by the site valuable to society?	
S 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, lake, or marine water that is on the 303(d) list? Yes = 1 No = 0	0
S 3.2. Is the wetland in a basin or sub-basin where water quality is an issue? At least one aquatic resource in the basin is on the 303(d) list.	s 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 for the basin in which unit is found. Yes = 2 No = 0	0
Total for S 3Add the points in the boxes above	1

Rating of Value If score is: 2-4 = H X1 = M 0 = L

Record the rating on the first page

SLOPE WETLANDS	
Hydrologic Functions - Indicators that the site functions to reduce flooding and stream eros	sion
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 Rating of Site Potential If score is:1 = M _X_0 = L	0 the first page
S 5.0. Does the landscape have the potential to support the hydrologic functions of the site?	
S 5.1. Is more than 25% of the area within 150 ft upslope of wetland in land uses or cover that generate excess surface runoff? Yes = 1 No = 0	0

Rating of Landscape Potential If score is: 1 = M X 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 down-gradient of site has flooding problems that result in damage to human or	
natural resources (e.g., houses or salmon redds)points = 2Surface flooding problems are in a sub-basin farther down-gradientpoints = 1No flooding problems anywhere downstreampoints = 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 $N_0 = 0$	0
Total for S 6Add the points in the boxes above	1

Rating of Value If score is: 2-4 = H <u>X</u>1 = M 0 = L

Record the rating on the first page

NOTES and FIELD OBSERVATIONS:

	rovide important habitat	
1.0. Does the site have the potential to provide habitat?		
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	-	
of ¼ 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	
<u>X</u> Scrub-shrub (areas where shrubs have > 30% cover)	2 structures: points = 1	0
Forested (areas where trees have > 30% cover)	1 structure: points = 0	U
If the unit has a Forested class, check if:	and should be the second second second	
The Forested class has 3 out of 5 strata (canopy, sub-cano that each cover 20% within the Forested polygon	py, shrubs, herbaceous, moss/ground-cover)	
1.2. Hydroperiods		
Check the types of water regimes (hydroperiods) present within	n the wetland. The water regime has to cover	
more than 10% of the wetland or ¼ ac to count (see text for de	-	
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	e wetland	
Seasonally flowing stream in, or adjacent to, the wetland		
Lake Fringe wetland	2 points	
Freshwater tidal wetland	2 points	
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 species. Do not include Eurasian milfoil, reed canarygras .		
If you counted: > 19 species	points = 2	1
5 - 19 species	points = 1	-
< 5 species	points = 0	
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 r		
have four or more plant classes or three classes and open wate	r, the rating is always high.	
\bigcirc		
		0
	Moderate = 2 points	
None = 0 points Low = 1 point		
None = 0 points Low = 1 point		
None = 0 points Low = 1 point		
None = 0 points Low = 1 point		
None = 0 points Low = 1 point Il three diagrams		

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)	1
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)	
<u>X</u> Invasive plants cover less than 25% of the wetland area in every stratum of plants (see H 1.1 for list of strata)	
Total for H 1Add the points in the boxes above	2

Rating of Site Potential If score is: __15-18 = H ___7-14 = M χ_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 <u>0</u> + [(% moderate and low intensity land uses)/2] <u>0</u> = <u>0</u> %	
If total accessible habitat is:	
> ¹ / ₃ (33.3%) of 1 km Polygon points = 3	0
20-33% of 1 km Polygon points = 2	
10-19% of 1 km Polygon points = 1	
< 10% of 1 km Polygon points = 0	
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland.	
Calculate: % undisturbed habitat 0 + [(% moderate and low intensity land uses)/2]0 = 0 %	
Undisturbed habitat > 50% of Polygon points = 3	0
Undisturbed habitat 10-50% and in 1-3 patches points = 2	0
Undisturbed habitat 10-50% and > 3 patches points = 1	
Undisturbed habitat < 10% of 1 km Polygon points = 0	
H 2.3. Land use intensity in 1 km Polygon: If	
> 50% of 1 km Polygon is high intensity land use points = (- 2)	-2
≤ 50% of 1 km Polygon is high intensity points = 0	
Total for H 2 Add the points in the boxes above	-2
Rating of Landscape Potential If score is:4-6 = H1-3 = MX < 1 = L Record the rating on the	ne 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 1 — 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 = 1Site does not meet any of the criteria above points = 0Rating of Value If score is: 2 = H X1 = M 0 = L *Record the rating on the first page*

WDFW Priority Habitats

<u>Priority habitats listed by WDFW</u> (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. <u>http://wdfw.wa.gov/publications/00165/wdfw00165.pdf</u> or access the list from here: <u>http://wdfw.wa.gov/conservation/phs/list/</u>)

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: <u>Old-growth west of Cascade crest</u> 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. <u>Mature forests</u> 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.
- <u>X</u> 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 Rating System for Western WA: 2014 Update Rating Form – Effective January 1, 2015

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type	Category
Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.	
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?	Cat. I
Yes = Category I No - Go to SC 1.2	
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	Cat. I
than 10% cover of non-native plant species. (If non-native species are Spartina, see page 25)	Cat. I
— 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.	Cat. II
— 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	
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 2.2No - Go to SC 2.3	Cat. I
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	
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.	Cat. I
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	

SC 4.0. Forested Wetlands	
Does the wetland have at least <u>1 contiguous acre</u> of forest that meets one of these criteria for the WA	
Department of Fish and Wildlife's forests as priority habitats? 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 partian of the lagoon (needs to be provided near the bettamb).	Cat. I
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)	catin
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).	Cat. II
— 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	
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 	Cat I
Grayland-Westport: Lands west of SR 105	Cati
 Ocean Shores-Copalis: Lands west of SR 115 and SR 109 Yes Co to SC 51 	
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	Cat. II
for the three aspects of function)? Yes = Category I No – Go to SC 6.2	
SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger?	
Yes = Category II No – Go to SC 6.3	Cat. III
SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac?	
Yes = Category III No = Category IV	Cat. IV
Category of wetland based on Special Characteristics If you answered No for all types, enter "Not Applicable" on Summary Form	N/A

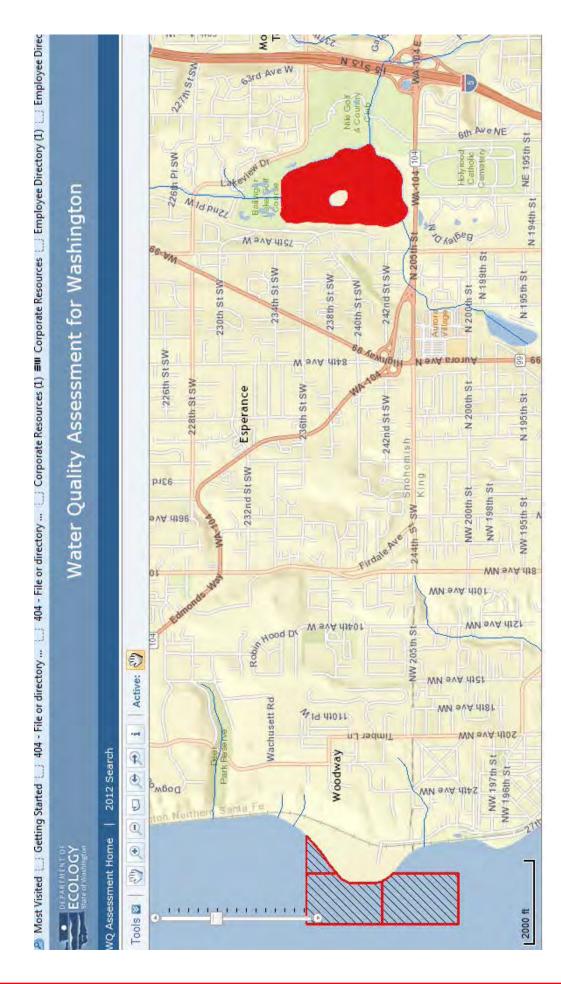
Wetland A Notes:

- Entire wetland is scrub-shrub Cowardin class
- Entire wetland is saturated
- Dense, uncut vegetation is ~ 60% of wetland
- Dense ridgid vegetation ~50% of wetland



Wetland A Rating Figure 1. Cowardin Class, Hydroperiod and Pollutant Generating Surfaces





Water Quality Improvement Projects (TMDLs)

WATER QUALITY IMPROVEMENT PROJECTS (TMDLs)

Overview of the process Project Catalog by WRIA by County

Funding Opportunities Project Development Priority Lists Related Information TMDL Contacts

RELATED ECOLOGY PROGRAMS

Water Quality

Water Quality Improvement > Water Quality Improvement Projects by WRIA > WRIA 8: Cedar-Sammamish

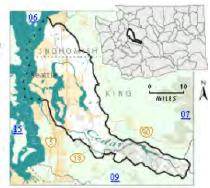
WRIA 8: Cedar-Sammamish

The following table lists overview information for water quality improvement projects (including total maximum daily loads, or TMDLs) for this water resource inventory area (<u>WRIA</u>). Please use links (where available) for more information on a project.

Counties

King

Snohomish



Waterbody Name	Pollutants	Status**	TMDL Lead
Ballinger Lake	Total Phosphorus	Approved by EPA	Tricia Shoblom 425-649-7288
Bear-Evans Creek Basin	Fecal Coliform	Approved by EPA	<u>Joan Nolan</u> 425-649-4425
	Dissolved Oxygen Temperature	Approved by EPA	
Cottage Lake	Total Phosphorus	Approved by EPA Has an implementation plan	<u>Tricia Shoblom</u> 425-649-7288
<u>Issaquah Creek Basin</u>	Fecal Coliform	Approved by EPA	<u>Joan Nolan</u> 425-649-4425
<u>Little Bear Creek</u> Tributaries: Trout Stream Great Dane Creek Cutthroat Creek	Fecal Coliform	Approved by EPA	<u>Ralph Svricek</u> 425-649-7036
North Creek	Fecal Coliform	Approved by EPA Has an implementation plan	<u>Ralph Svricek</u> 425-649-7036
Pipers Creek	Fecal Coliform	Approved by EPA	<u>Joan Nolan</u> 425-649-4425
Sammamish River	Dissolved Oxygen Temperature	Field work starts summer 2015	Ralph Svrjcek 425-649-7036
Swamp Creek	Fecal Coliform	Approved by EPA Has an implementation	Ralph Svrjcek 425-649-7036

Wetland A Rating Figure 4. WRIA 8 TMDL Screen Capture

RATING SUMMARY – Western Washington

Name of wetland (or ID #):Wetland BDate of site visit:7/6 and 7/7/15Rated byS Corbin, (PWS)Trained by Ecology? X YesNo Date of training 10/09 and 5/ 14

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

NOTE: Form is not complete without the figures requested (figures can be combined). Source of base aerial photo/map <u>Google Earth</u>

OVERALL WETLAND CATEGORY <u>III</u> (based on functions <u>X</u> or special characteristics)

1. Category of wetland based on FUNCTIONS

____Category I – Total score = 23 - 27

____Category II – Total score = 20 - 22

X Category III – Total score = 16 - 19

Category IV – Total score = 9 - 15

FUNCTION		nprov ter Qu	•	H	ydrolo	gic		Habita	at	
					Circle t	the ap	propi	riate ra	tings	
Site Potential	Н	M	L	Н	M	L	Н	M (
Landscape Potential	H	М	L	H	M	L	Н	Μ	$\overline{\mathbb{O}}$	
Value	Н	M	L	Н	(M)	L	Н	M	L	TOTAL
Score Based on Ratings		7			7			4		18

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

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

2. Category based on SPECIAL CHARACTERISTICS of wetland

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

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	1
Hydroperiods	D 1.4, H 1.2	1
Location of outlet (can be added to map of hydroperiods)	D 1.1, D 4.1	1
Boundary of area within 150 ft of the wetland (can be added to another figure)	D 2.2, D 5.2	1
Map of the contributing basin	D 4.3, D 5.3	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	3
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	4
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	5

Riverine Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	Н 1.1, Н 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	Н 1.1, Н 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	S 4.1	
(can be added to figure above)		
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	

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?

 $\mathbb{N}0$ – 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) *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 <u>B</u>

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

DEPRESSIONAL AND FLATS WETLANDS		
Water Quality Functions - Indicators that the site functions to improve wa	ter quality	
D 1.0. Does the site have the potential to improve water quality?		
D 1.1. <u>Characteristics of surface water outflows from the wetland</u> : Wetland is a depression or flat depression (QUESTION 7 on key) with no surface water leaving it (r	no outlet).	
Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing	points = 3 g outlet. points = 2	3
Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch.	points = 1 points = 1	
D 1.2. The soil 2 in below the surface (or duff layer) is true clay or true organic (use NRCS definitions). Yes	s = 4 No = 0	0
D 1.3. <u>Characteristics and distribution of persistent plants</u> (Emergent, Scrub-shrub, and/or Forested Cow Wetland has persistent, ungrazed, plants > 95% of area	ardin classes): points = 5	
Wetland has persistent, ungrazed, plants > $\frac{1}{2}$ of area	points = 3	1
Wetland has persistent, ungrazed plants $> 1/_{10}$ of area Wetland has persistent, ungrazed plants $< 1/_{10}$ of area	points ① points = 0	
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	4
Area seasonally ponded is > ¼ total area of wetland Area seasonally ponded is < ¼ total area of wetland	points = 2 points = 0	
		0
Total for D 1 Add the points in the b	oxes above	8

Rating of Site Potential If score is: 12-16 = H X 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 th	e 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 questic Source <u>residential</u> , dog poop from dog walkers	ons D 2.1-D 2.3? Yes = 1 No = 0	1
Total for D 2Add the points	in the boxes above	3

Rating of Landscape Potential If score is: X **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	0
Total for D 3Add the points in the boxes above	1
Rating of ValueIf score is: $2-4 = H$ X $1 = M$ $0 = L$ Record the rating on the first page	

DEPRESSIONAL AND FLATS WETLANDS	ion
Hydrologic Functions - Indicators that the site functions to reduce flooding and stream degradat D 4.0. Does the site have the potential to reduce flooding and erosion?	1011
	[
D 4.1. Characteristics of surface water outflows from the wetland: points = 4 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 outletpoints = 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 Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet The wetland is a "headwater" wetland Wetland is flat but has small depressions on the surface that trap water Marks of ponding less than 0.5 ft (6 in)	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 = 0 Entire wetland is in the Flats class 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 unit points = 5 D 4.3. Contribution of the wetland to storage in the wetland unit itself. The area of the basin is 10 to 100 times the area of the unit points = 5 D 4.4. Contribution of the wetland is in the Flats class	3
Total for D 4 Add the points in the boxes above	10
Rating of Site Potential If score is: 12-16 = H X 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? ($ves = 1$) 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.)?	1
Total for D 5Add the points in the boxes above	3
Rating of Landscape Potential If score is: X3 = 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. <u>The unit is in a landscape that has flooding problems</u>. Choose the description that best matches conditions around the wetland unit being rated. Do not add points. <u>Choose the highest score if more than one condition is met</u>. The wetland captures surface water that would otherwise flow 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. 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 stand by the wetland score that flood. <i>Currelain why</i> 	1
water stored by the wetland cannot reach areas that flood. <i>Explain why</i> points = 0There are no problems with flooding downstream of the wetland.points = 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 $No = 0$	
Total for D 6Add 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

HABITAT FUNCTIONS - Indicate	ors that site functions to pro	ovide important habitat	
1.0. Does the site have the poten	tial to provide habitat?		
Cowardin plant classes in the we of ¼ ac or more than 10% of the Aquatic bed	tland. Up to 10 patches may be	nd strata within the Forested class. Check the combined for each class to meet the threshold dd the number of structures checked. 4 structures or more: points = 4	
Emergent Scrub-shrub (areas where s X Forested (areas where tree If the unit has a Forested c The Forested class has 3 ou that each cover 20% withir	s have > 30% cover) l <i>ass, check if:</i> t of 5 strata (canopy, sub-canopy	3 structures: points = 2 2 structures: points = 1 1 structure: points = 0 y, shrubs, herbaceous, moss/ground-cover)	0
more than 10% of the wetland of Permanently flooded or inu X_Seasonally flooded or inu Occasionally flooded or inu X_Saturated only Permanently flowing stream	r ¼ ac to count (<i>see text for desc</i> ndated lated	4 or more types present: points = 3 3 types present: points = 2 2 types present: points = 1 1 type present: points = 0	1
	ecies can be combined to meet t	east 10 ft ² . <i>he size threshold and you do not have to name</i> <i>purple loosestrife, Canadian thistle</i> points = 2 points = 1 points = 0	1
1.4. Interspersion of habitats Decide from the diagrams below	as (can include open water or m	Cowardin plants classes (described in H 1.1), or udflats) is high, moderate, low, or none. <i>If you</i>	0

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 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)	3
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)	
<u>X</u> Invasive plants cover less than 25% of the wetland area in every stratum of plants (see H 1.1 for list of strata)	
Total for H 1Add the points in the boxes above	5

Rating of Site Potential If score is: 15-18 = H 7-14 = M X0-6 = 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).	
<i>Calculate:</i> % undisturbed habitat <u>0</u> + [(% moderate and low intensity land uses)/2] <u>0</u> = <u>0</u> %	
If total accessible habitat is:	
> ¹ / ₃ (33.3%) of 1 km Polygon points = 3	
20-33% of 1 km Polygon points = 2	0
10-19% of 1 km Polygon points = 1	
< 10% of 1 km Polygon points = 0	
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland.	
<i>Calculate:</i> % undisturbed habitat $0 + [(\% \text{ moderate and low intensity land uses})/2] 0 = 0 \%$	
Undisturbed habitat > 50% of Polygon points = 3	
Undisturbed habitat 10-50% and in 1-3 patches points = 2	0
Undisturbed habitat 10-50% and > 3 patches points = 1	
Undisturbed habitat < 10% of 1 km Polygon points = 0	
H 2.3. Land use intensity in 1 km Polygon: If	
> 50% of 1 km Polygon is high intensity land use	-2
≤ 50% of 1 km Polygon is high intensity points = 0	
Total for H 2 Add the points in the boxes above	-2
Rating of Landscape Potential If score is:4-6 = H1-3 = M $X < 1 = L$ Record the rating on the second the sec	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	y 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 st	ate 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 	l Resources	1
 It has been categorized as an important habitat site in a local or regional comprehensive 	e 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	
Rating of Value If score is: 2 = H X 1 = M 0 = L	Record the rating on	the first page

Wetland Rating System for Western WA: 2014 Update

Rating Form – Effective January 1, 2015

WDFW Priority Habitats

<u>Priority habitats listed by WDFW</u> (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. <u>http://wdfw.wa.gov/publications/00165/wdfw00165.pdf</u> or access the list from here: <u>http://wdfw.wa.gov/conservation/phs/list/</u>)

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: <u>Old-growth west of Cascade crest</u> 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. <u>Mature forests</u> 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.
- 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.

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

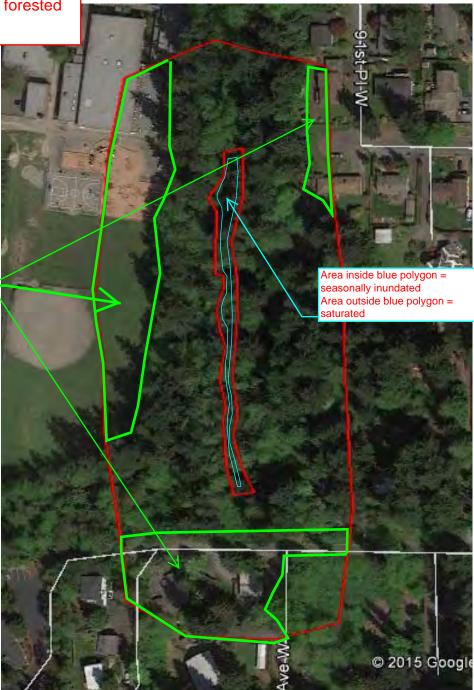
CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type	Category
Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.	
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)	Cat. I
— 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.	Cat. II
— The wetland has at least two of the following features: tidal channels, depressions with open water, or	cutin
contiguous freshwater wetlands. Yes = Category I No = Category 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	Cat. I
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	
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 bogNo - 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	Cat. I
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,	5441
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	

SC 4.0. Forested Wetlands	
Does the wetland have at least <u>1 contiguous acre</u> of forest that meets one of these criteria for the WA	
Department of Fish and Wildlife's forests as priority habitats? 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 concerning a multi-layered species of the spec	
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)	Cat. I
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)	cut. I
SC 5.1. Does the wetland meet all of the following three conditions?	
— The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less	
than 20% cover of aggressive, opportunistic plant species (see list of species 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	
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 	Cat I
 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	Cat. II
for the three aspects of function)? Yes = Category I No – Go to SC 6.2	
SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger? Yes = Category II No – Go to SC 6.3	Cat. III
SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac?	
Yes = Category III No = Category IV	
	Cat. IV
Category of wetland based on Special Characteristics	N/A
If you answered No for all types, enter "Not Applicable" on Summary Form	1N/ A

Wetland B Notes: - No outlet present - Entire wetland is forested Cowardin classs

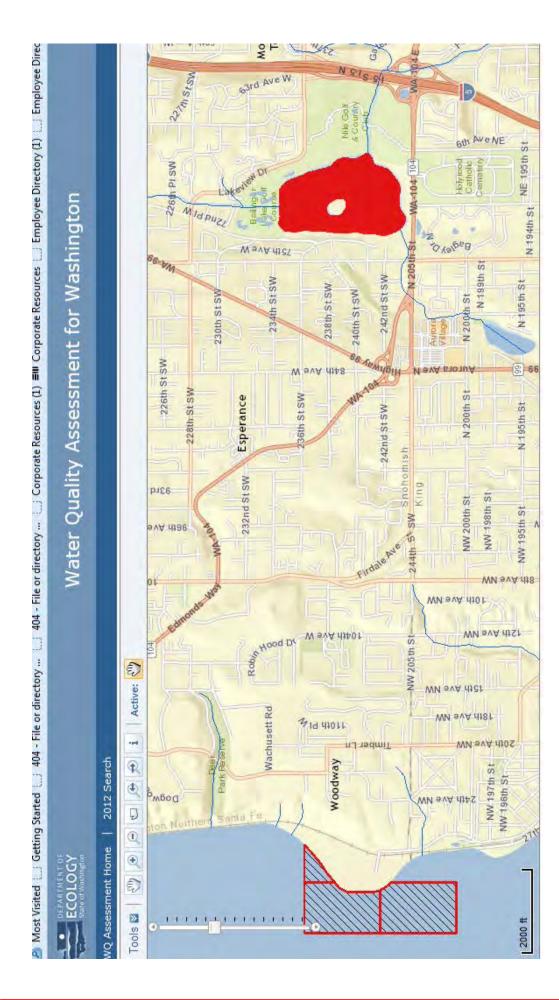
Pollutant Generating Surface in 150 foot buffer



Wetland B Rating Figure 1. Cowardin Class, Hydroperiod, and Pollutant Generating Surface







Water Quality Improvement Projects (TMDLs)

WATER QUALITY IMPROVEMENT PROJECTS (TMDLs)

Overview of the process Project Catalog by WRIA by County

Funding Opportunities Project Development Priority Lists Related Information TMDL Contacts

RELATED ECOLOGY PROGRAMS

Water Quality

Water Quality Improvement > Water Quality Improvement Projects by WRIA > WRIA 8: Cedar-Sammamish

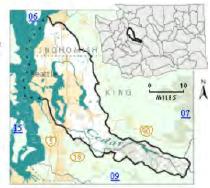
WRIA 8: Cedar-Sammamish

The following table lists overview information for water quality improvement projects (including total maximum daily loads, or TMDLs) for this water resource inventory area (<u>WRIA</u>). Please use links (where available) for more information on a project.

Counties

King

Snohomish



Waterbody Name	Pollutants	Status**	TMDL Lead
Ballinger Lake	Total Phosphorus	Approved by EPA	Tricia Shoblom 425-649-7288
Bear-Evans Creek Basin	Fecal Coliform	Approved by EPA	Joan Nolan
	Dissolved Oxygen Temperature	Approved by EPA	425-649-4425
Cottage Lake	Total Phosphorus	Approved by EPA Has an implementation plan	<u>Tricia Shoblom</u> 425-649-7288
Issaquah Creek Basin	Fecal Coliform	Approved by EPA	<u>Joan Nolan</u> 425-649-4425
<u>Little Bear Creek</u> Tributaries: Trout Stream Great Dane Creek Cutthroat Creek	Fecal Coliform	Approved by EPA	Ralph Svricek 425-649-7036
North Creek	Fecal Coliform	Approved by EPA Has an implementation plan	<u>Ralph Svrjcek</u> 425-649-7036
Pipers Creek	Fecal Coliform	Approved by EPA	<u>Joan Nolan</u> 425-649-4425
Sammamish River	Dissolved Oxygen Temperature	Field work starts summer 2015	Ralph Svrjcek 425-649-7036
Swamp Creek	Fecal Coliform	Approved by EPA Has an implementation	Ralph Svrjcek 425-649-7036

Wetland B Rating Figure 5. WRIA 8 TMDL Screen Shot

RATING SUMMARY – Western Washington

 Name of wetland (or ID #):
 Wetland C
 Date of site visit:
 7/6 and 7/7/15

 Rated by
 S. Corbin (PWS)
 Trained by Ecology? X Yes ____No Date of training10/09 and 5/14

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

NOTE: Form is not complete without the figures requested (figures can be combined). Source of base aerial photo/map <u>Google Earth</u>

OVERALL WETLAND CATEGORY <u>IV</u> (based on functions <u>x</u> 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	
		Circle the ap	propriate ratings	
Site Potential	н м 🜔	н м 🜔	H M L	
Landscape Potential	H M L	H M L	H M L	
Value	н 🕅 L	H M L	H M L	ΤΟΤΑ
Score Based on Ratings	5	4	4	13

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

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	H 2.1, H 2.2, H 2.3	
polygons for accessible habitat and undisturbed habitat		
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 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	1
Hydroperiods	H 1.2	1
Plant cover of dense trees, shrubs, and herbaceous plants	S 1.3	1
Plant cover of dense, rigid trees, shrubs, and herbaceous plants (can be added to figure above)	S 4.1	1
Boundary of 150 ft buffer (can be added to another figure)	S 2.1, S 5.1	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	2
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	3
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	S 3.3	4

Wetland Rating System for Western WA: 2014 Update Rating Form – Effective January 1, 2015

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) *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 <u>C</u>

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

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

SLOPE WETLANDS Water Quality Functions - Indicators that the site functions to improve water quality	
S 1.0. Does the site have the potential to improve water quality?	
S 1.1. Characteristics of the average slope of the wetland: (a 1% slope has a 1 ft vertical drop in elevation for every 100 ft of horizontal distance)	
Slope is 1% or less points = 3	0
Slope is > 1%-2% points = 2	Ŭ
Slope is > 2%-5% points = 1	
Slope is greater than 5% points = 0	
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	0
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	
Total for S 1Add the points in the boxes above	0
Rating of Site Potential If score is:12 = H $6-11 = M$ $X 0-5 = L$ Record the rating on	the first po
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?	0
Yes = 1 No = 0	0
S 2.2. Are there other sources of pollutants coming into the wetland that are not listed in question S 2.1?	1
Other sources <u>Dog walkers/ d</u> og poop Yes = 1 No = 0	1
Total for S 2Add the points in the boxes above	1
Rating of Landscape Potential If score is: X1-2 = M0 = LRecord the rating on	the first po
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	0
303(d) list? Yes = 1 No = 0	
	s 1
303(d) list?Yes = 1No = 0S 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	

Rating of Value If score is: 2-4 = H X1 = M0 = L

Total for S 3

Record the rating on the first page

1

Add the points in the boxes above

SLOPE WETLANDS	
Hydrologic Functions - Indicators that the site functions to reduce flooding and stream eros	ion
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 points = 0	0
Rating of Site Potential If score is: $1 = M \times 1 = M \times 1 = M$ 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 0 surface runoff? Yes = 1 No = 0

Rating of Landscape Potential If score is: <u>1 = M X0 = L</u>

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 down-gradient of site has flooding problems that result in damage to human or natural resources (e.g., houses or salmon redds)points = 2Surface flooding problems are in a sub-basin farther down-gradientpoints = 1No flooding problems anywhere downstreampoints = 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 6Add 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

Record the rating on the first page

NOTES and FIELD OBSERVATIONS:

		rovide important habitat	
H 1.0. Does the site have the po	tential to provide habitat?		
Cowardin plant classes in the	wetland. Up to 10 patches may be	and strata within the Forested class. Check the e combined for each class to meet the threshold Add the number of structures checked. 4 structures or more: points = 4	
Forested (areas where t If the unit has a Foreste The Forested class has 3	d class, check if:	3 structures: points = 2 2 structures: points = 1 1 structure: points = 0 by, shrubs, herbaceous, moss/ground-cover)	0
H 1.2. Hydroperiods Check the types of water reg more than 10% of the wetlar Permanently flooded or Seasonally flooded or in Occasionally flooded or Saturated only Permanently flowing str	imes (hydroperiods) present withir id or ¼ ac to count (<i>see text for des</i> inundated undated inundated eam or river in, or adjacent to, the m in, or adjacent to, the wetland	4 or more types present: points = 3 3 types present: points = 2 2 types present: points = 1 1 type present: points = 0	0
Different patches of the same	Eurasian milfoil, reed canarygrass	least 10 ft ² . <i>the size threshold and you do not have to name</i> <i>s, purple loosestrife, Canadian thistle</i> points = 2 points = 1 points = 0	1
H 1.4. Interspersion of habitats Decide from the diagrams be the classes and unvegetated		Cowardin plants classes (described in H 1.1), or nudflats) is high, moderate, low, or none. <i>If you</i>	0

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)	1
At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated <i>(structures for egg-laying by amphibians)</i>	
X Invasive plants cover less than 25% of the wetland area in every stratum of plants (see H 1.1 for list of strata)	
Total for H 1Add the points in the boxes above	2

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 th	e site?	
H 2.1. Accessible habitat (include only habitat that directly abuts wetland unit).		
<i>Calculate:</i> % undisturbed habitat <u>0</u> + [(% moderate and low intensity land	uses)/2] <u>0</u> =%	
If total accessible habitat is:		
> ¹ / ₃ (33.3%) of 1 km Polygon	points = 3	0
20-33% of 1 km Polygon	points = 2	0
10-19% of 1 km Polygon	points = 1	
< 10% of 1 km Polygon	points = 0	
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland.		
Calculate: % undisturbed habitat_0_ + [(% moderate and low intensity land	uses)/2] <u>0</u> = <u>0</u> %	
Undisturbed habitat > 50% of Polygon	points = 3	
Undisturbed habitat 10-50% and in 1-3 patches	points = 2	0
Undisturbed habitat 10-50% and > 3 patches	points = 1	
Undisturbed habitat < 10% of 1 km Polygon	points = 0	
H 2.3. Land use intensity in 1 km Polygon: If		
> 50% of 1 km Polygon is high intensity land use	points = (- 2)	-2
≤ 50% of 1 km Polygon is high intensity	points = 0	
Total for H 2 Add the p	points in the boxes above	-2
Rating of Landscape Potential If score is: 4-6 = H 1-3 = M X < 1 = L	Record the rating on th	e first naae

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? <i>Choose only that applies to the wetland being rated.</i>	the highest score	
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 sta	ate or federal lists)	
 It is mapped as a location for an individual WDFW priority species 		1
 It is a Wetland of High Conservation Value as determined by the Department of Natural 	Resources	1
 It has been categorized as an important habitat site in a local or regional comprehensive 	e plan, in a	
Shoreline Master Plan, or in a watershed plan	nointe 1	
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	
Rating of Value If score is: 2 = H X1 = M 0 = L	Record the rating on	the first pag

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WDFW Priority Habitats

<u>Priority habitats listed by WDFW</u> (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. <u>http://wdfw.wa.gov/publications/00165/wdfw00165.pdf</u> or access the list from here: <u>http://wdfw.wa.gov/conservation/phs/list/</u>)

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: <u>Old-growth west of Cascade crest</u> 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. <u>Mature forests</u> 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.
- 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.

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

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CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type	Category
Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.	
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?	Cat. I
Yes = Category I No - Go to SC 1.2	
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	Cat. I
than 10% cover of non-native plant species. (If non-native species are Spartina, see page 25)	Cat. I
— 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.	Cat. II
— 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	
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 2.2No - Go to SC 2.3	Cat. I
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	
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.	Cat. I
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	

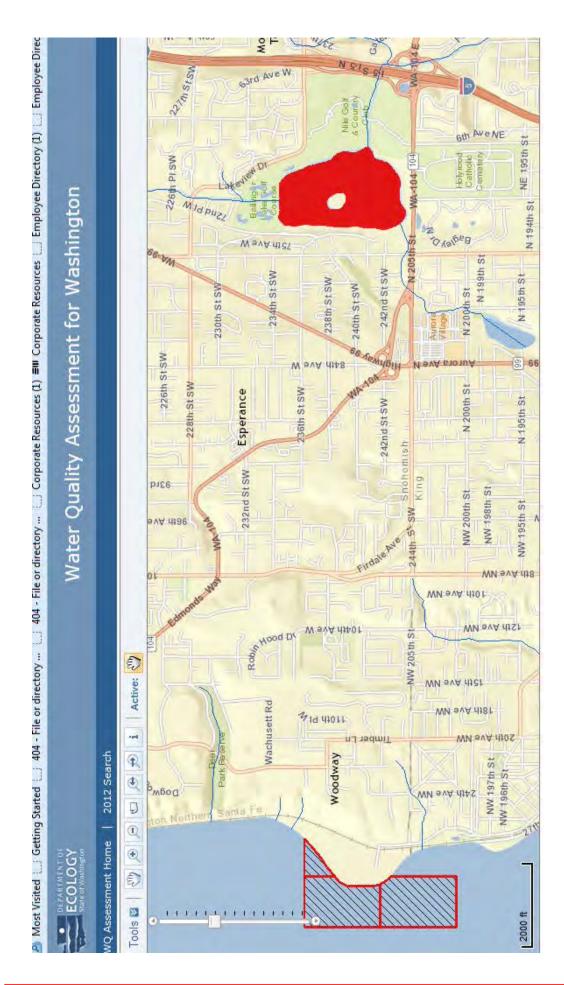
SC 4.0. Forested Wetlands	
Does the wetland have at least <u>1 contiguous acre</u> of forest that meets one of these criteria for the WA	
Department of Fish and Wildlife's forests as priority habitats? <i>If you answer YES you will still need to rate</i>	
the wetland based on its functions. — Old-growth 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)	Cat. I
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).	Cat. II
— 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	
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 	Cat I
 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	Cat. II
for the three aspects of function)? Yes = Category I No – Go to SC 6.2	
SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger? Yes = Category II No – Go to SC 6.3	Cat. III
SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac?	
Yes = Category III No = Category IV	
	Cat. IV
Category of wetland based on Special Characteristics	
If you answered No for all types, enter "Not Applicable" on Summary Form	



- Dense, uncut vegetation is ~ 10% of wetland
- Dense rigid vegetation ~10% of wetland



Wetland C Rating Figure 2. One Kilometer Buffer Land Use Intensity



Water Quality Improvement Projects (TMDLs)

WATER QUALITY IMPROVEMENT PROJECTS (TMDLs)

Overview of the process Project Catalog by WRIA by County

Funding Opportunities Project Development Priority Lists Related Information TMDL Contacts

RELATED ECOLOGY PROGRAMS

Water Quality

Water Quality Improvement > Water Quality Improvement Projects by WRIA > WRIA 8: Cedar-Sammamish

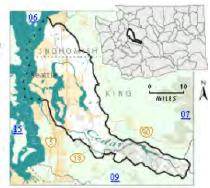
WRIA 8: Cedar-Sammamish

The following table lists overview information for water quality improvement projects (including total maximum daily loads, or TMDLs) for this water resource inventory area (<u>WRIA</u>). Please use links (where available) for more information on a project.

Counties

• King

Snohomish



Waterbody Name	Pollutants	Status**	TMDL Lead
Ballinger Lake	Total Phosphorus	Approved by EPA	<u>Tricia Shoblom</u> 425-649-7288
Bear-Evans Creek Basin	Fecal Coliform	Approved by EPA	Joan Nolan
	Dissolved Oxygen Temperature	Approved by EPA	425-649-4425
Cottage Lake	Total Phosphorus	Approved by EPA Has an implementation plan	<u>Tricia Shoblom</u> 425-649-7288
Issaguah Creek Basin	Fecal Coliform	Approved by EPA	<u>Joan Nolan</u> 425-649-4425
<u>Little Bear Creek</u> Tributaries: Trout Stream Great Dane Creek Cutthroat Creek	Fecal Coliform	Approved by EPA	Ralph Svricek 425-649-7036
North Creek	Fecal Coliform	Approved by EPA Has an implementation plan	<u>Ralph Svricek</u> 425-649-7036
Pipers Creek	Fecal Coliform	Approved by EPA	<u>Joan Nolan</u> 425-649-4425
Sammamish River	Dissolved Oxygen Temperature	Field work starts summer 2015	Ralph Svrjcek 425-649-7036
Swamp Creek	Fecal Coliform	Approved by EPA Has an implementation	Ralph Svrjcek 425-649-7036

Wetland C Rating Figure 3. WRIA 8 TMDL Screen Shot

APPENDIX D

IMPORTANT INFORMATION ABOUT YOUR WETLAND DELINEATION/MITIGATION AND/OR STREAM CLASSIFICATION REPORT



Attachment to and part of Report 21-1-20581-010

Date: September 15, 2015

To: Ms. Taine Wilton Edmonds School District #15

IMPORTANT INFORMATION ABOUT YOUR WETLAND DELINEATION/MITIGATION AND/OR STREAM CLASSIFICATION REPORT

A WETLAND/STREAM REPORT IS BASED ON PROJECT-SPECIFIC FACTORS.

Wetland delineation/mitigation and stream classification reports are based on a unique set of project-specific factors. These typically include the general nature of the project and property involved, its size, and its configuration; historical use and practice; the location of the project on the site and its orientation; and the level of additional risk the client assumed by virtue of limitations imposed upon the exploratory program. The jurisdiction of any particular wetland/stream is determined by the regulatory authority(s) issuing the permit(s). As a result, one or more agencies will have jurisdiction over a particular wetland or stream with sometimes confusing regulations. It is necessary to involve a consultant who understands which agency(s) has jurisdiction over a particular wetland/stream and what the agency(s) permitting requirements are for that wetland/stream. To help reduce or avoid potential costly problems, have the consultant determine how any factors or regulations (which can change subsequent to the report) may affect the recommendations.

Unless your consultant indicates otherwise, your report should not be used:

- If the size or configuration of the proposed project is altered.
- If the location or orientation of the proposed project is modified.
- If there is a change of ownership.
- For application to an adjacent site.
- For construction at an adjacent site or on site.
- ► Following floods, earthquakes, or other acts of nature.

Wetland/stream consultants cannot accept responsibility for problems that may develop if they are not consulted after factors considered in their reports have changed. Therefore, it is incumbent upon you to notify your consultant of any factors that may have changed prior to submission of our final report.

Wetland boundaries identified and stream classifications made by Shannon & Wilson are considered preliminary until validated by the U.S. Army Corps of Engineers (Corps) and/or the local jurisdictional agency. Validation by the regulating agency(s) provides a certification, usually written, that the wetland boundaries verified are the boundaries that will be regulated by the agency(s) until a specified date, or until the regulations are modified, and that the stream has been properly classified. Only the regulating agency(s) can provide this certification.

MOST WETLAND/STREAM "FINDINGS" ARE PROFESSIONAL ESTIMATES.

Site exploration identifies wetland/stream conditions at only those points where samples are taken and when they are taken, but the physical means of obtaining data preclude the determination of precise conditions. Consequently, the information obtained is intended to be sufficiently accurate for design, but is subject to interpretation. Additionally, data derived through sampling and subsequent laboratory testing are extrapolated by the consultant who then renders an opinion about overall conditions, the likely reaction to proposed construction activity, and/or appropriate design. Even under optimal circumstances, actual conditions may differ from those thought to exist because no consultant, no matter how qualified, and no exploration program, no matter how comprehensive, can reveal what is hidden by earth, rock, and time. Nothing can be done to prevent the unanticipated, but steps can be taken to help reduce their impacts. For this reason, most experienced owners retain their consultants through the construction or wetland mitigation/stream classification stage to identify variances, to conduct additional evaluations that may be needed, and to recommend solutions to problems encountered on site.

WETLAND/STREAM CONDITIONS CAN CHANGE.

Since natural systems are dynamic systems affected by both natural processes and human activities, changes in wetland boundaries and stream conditions may be expected. Therefore, delineated wetland boundaries and stream classifications cannot remain valid for an indefinite period of time. The Corps typically recognizes the validity of wetland delineations for a period of five years after completion. Some city and county agencies recognize the validity of wetland delineations for a period of two years. If a period of years have passed since the wetland/stream report was completed, the owner is advised to have the consultant reexamine the wetland/stream to determine if the classification is still accurate.

Construction operations at or adjacent to the site and natural events such as floods, earthquakes, or water fluctuations may also affect conditions and, thus, the continuing adequacy of the wetland/stream report. The consultant should be kept apprised of any such events and should be consulted to determine if additional evaluation is necessary.

THE WETLAND/STREAM REPORT IS SUBJECT TO MISINTERPRETATION.

Costly problems can occur when plans are developed based on misinterpretation of a wetland/stream report. To help avoid these problems, the consultant should be retained to work with other appropriate professionals to explain relevant wetland, stream, geological, and other findings, and to review the adequacy of plans and specifications relative to these issues.

DATA FORMS SHOULD NOT BE SEPARATED FROM THE REPORT.

Final data forms are developed by the consultant based on interpretation of field sheets (assembled by site personnel) and laboratory evaluation of field samples. Only final data forms customarily are included in a report. These data forms should not, under any circumstances, be drawn for inclusion in other drawings because drafters may commit errors or omissions in the transfer process. Although photographic reproduction eliminates this problem, it does nothing to reduce the possibility of misinterpreting the forms. When this occurs, delays, disputes, and unanticipated costs are frequently the result.

To reduce the likelihood of data form misinterpretation, contractors, engineers, and planners should be given ready access to the complete report. Those who do not provide such access may proceed under the mistaken impression that simply disclaiming responsibility for the accuracy of information always insulates them from attendant liability. Providing the best available information to contractors, engineers, and planners helps prevent costly problems and the adversarial attitudes that aggravate them to a disproportionate scale.

READ RESPONSIBILITY CLAUSES CLOSELY.

Because a wetland delineation/stream classification is based extensively on judgment and opinion, it is far less exact than other design disciplines. This situation has resulted in wholly unwarranted claims being lodged against consultants. To help prevent this problem, consultants have developed a number of clauses for use in written transmittals. These are not exculpatory clauses designed to foist the consultant's liabilities onto someone else; rather, they are definitive clauses that identify where the consultant's responsibilities begin and end. Their use helps all parties involved recognize their individual responsibilities and take appropriate action. Some of these definitive clauses are likely to appear in your report, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to your questions.

THERE MAY BE OTHER STEPS YOU CAN TAKE TO REDUCE RISK.

Your consultant will be pleased to discuss other techniques or designs that can be employed to mitigate the risk of delays and to provide a variety of alternatives that may be beneficial to your project.

Contact your consultant for further information.