Appendix J:
Wetlands
Discipline Report

Point Defiance Bypass Project

Wetlands Discipline Report

Washington State Department of Transportation

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Summary

This report has been prepared in support of the Point Defiance Bypass Project Environmental Assessment and in accordance with the National Environmental Policy Act (40 CFR 1500-1508), the State Environmental Policy Act (WAC 197-11), and the Federal Railroad Administration's Procedures for Considering Environmental Impacts (64 Fed. Reg. 28550).

The purpose of the Project is to provide more frequent high-speed intercity passenger rail service between Tacoma and Nisqually. By increasing rail capacity, the Project would support additional Amtrak service between Portland, Oregon, and Seattle, Washington.

The Project is located in Pierce County along an approximately 21-mile existing railroad corridor,[1] which passes through portions of the cities of Tacoma, Lakewood, and DuPont. The northern limit of the Project is near the crossing of Interstate 5 (I-5) over the Puyallup River in Tacoma, while the southern limit of the Project is near the crossing of Nisqually Road over the Nisqually River.

Four wetlands are present within the study area, defined as the railroad right-of-way within approximately 50 feet of the rails.

No effects to wetlands are anticipated. All four wetlands occur outside the Project footprint and would not be subject to excavation or fill. No effects to wetlands buffers are expected as construction activities would be restricted to the existing railroad fill prism.

Since no permanent or temporary effects to wetlands and buffers are expected, minimization is not required. Best Management Practices would be implemented during construction to address the potential for construction work to temporarily affect wetlands or buffers.

[1] *The three owners of the project corridor are Sound Transit, Tacoma Rail, and BNSF.*

Chapter 1 – Project Description

Introduction

Under the High-Speed Intercity Passenger Rail (HSIPR) Program and pursuant to a programmatic Tier I Environmental Assessment (EA) the Federal Railroad Administration (FRA) has approved an application from the Washington State Department of Transportation (WSDOT) to improve the Pacific Northwest Rail Corridor (PNWRC), a federally designated high-speed rail corridor. One project included in the PNWRC application is the Point Defiance Bypass Project (the Project), which would respond to deficiencies in the existing rail operations around Point Defiance. This Discipline Report has been prepared in support of the project-specific EA for the Point Defiance Bypass project.

The Project is located in Pierce County along an existing approximately 20-mile rail corridor between Tacoma and Nisqually.2 The Project would provide for the re-routing of Amtrak passenger trains from the BNSF rail line that runs along the southern Puget Sound shoreline (Puget Sound route) to the Point Defiance Bypass route, an existing rail corridor that runs along the west side of I-5. The Project would consist of railroad track and support facility improvements, and relocation of the Tacoma Amtrak Station to Freighthouse Square in Tacoma.

Purpose and Need

As described above, the Point Defiance Bypass route is part of the larger PNWRC. Within Washington State, the vision for the PNWRC is to "…improve intercity passenger rail service by reducing travel times and achieving greater schedule reliability in order to accommodate growing intercity travel demand…"[3].

The purpose of the Project is to provide more frequent and reliable high-speed intercity passenger rail service along the PNWRC between Tacoma and Nisqually. In conformity with the decisions under the Tier 1 Programmatic EA, the PNWRC Improvement Program has reduced the overall environmental effects of providing improved passenger rail service with the use of an existing transportation corridor and associated infrastructure, rather than creating a new corridor.

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[2] *The three owners of the project corridor are Sound Transit, Tacoma Rail, and BNSF.*
[3] *WSDOT 2009*

The Project is needed to address the deficiencies in the existing rail alignment around Point Defiance. The existing alignment (Puget Sound route), shared by freight and passenger rail traffic, is near capacity and is therefore unable to accommodate additional high-speed intercity passenger rail service without substantial improvements. In addition, the existing alignment has physical and operational constraints that adversely affect both passenger train scheduling and reliability.

Improving intercity passenger rail service in the project area and meeting the Project needs would be accomplished by:

- Enhanced Frequency: Increasing Amtrak Cascades round-trips from four to six by 2017 to meet projected service demands.
- Improved Reliability: Reducing scheduling conflicts with freight trains that often result in delays, and by minimizing or avoiding operational delays (e.g., drawbridge openings) and weather-related delays (e.g., mudslides), and improving on-time performance from 68 percent to 88 percent.
- Enhanced Efficiency: Enhancing the efficient movement of people by decreasing trip times by 10 minutes, and reducing the amount of time passenger trains spend yielding to freight movements.
- Improved Safety: Constructing at-grade crossings with upgraded safety features, including wayside horns, median barriers, advance warning signals, and traffic signal improvements.

What alternatives are being considered for the Point Defiance Bypass Project?

WSDOT conducted an evaluation of three build alternatives: the Point Defiance Bypass Alternative, the Shoreline Alternative, and the Greenfield Alternative. Two of the alternatives (the Shoreline Alternative, and the Greenfield Alternative) were eliminated from further study. Although both alternatives could meet the Project's purpose and need, they were determined to be impracticable and unfeasible due to technical constraints, high construction costs, and significant environmental effects. Grade separations were also evaluated for further consideration. WSDOT's preliminary analysis revealed that current and projected future traffic volumes do not warrant the construction of new grade-separated crossings.

What's happening in the bypass corridor today?

The rail line between TR Junction and East "D" Street in Tacoma hosts both freight and commuter trains, including freight operators Tacoma Rail and BNSF, and Sound Transit's *Sounder* commuter rail service. Freight train traffic between TR Junction and East "D" Street averages under two

trains per day, while Sound Transit currently operates 18 trains per day between Freighthouse Square and Seattle each weekday, and also offers occasional special event trains, usually on weekends, to serve sporting and other events in Seattle. *Sounder* service to Lakewood begins in late 2012.

What would happen if the Project were not built?

If the Project were not built (the No Build Alternative), Amtrak's Cascades and Coast Starlight passenger train service would continue to use the existing Puget Sound route. The No Build Alternative includes only the minor maintenance and repair activities necessary to keep the existing Puget Sound route operational. With the No Build Alternative, it would be expected that as freight traffic increases, congestion would adversely affect Amtrak service reliability, and the travel time for Amtrak trains between Seattle and Portland would increase.

Along the Point Defiance Bypass route, the Tacoma Rail and BNSF freight services would continue. The at-grade crossings at Clover Creek Drive Southwest, North Thorne Lane Southwest, Berkeley Street Southwest, 41st Division Drive, and Barksdale Avenue Southwest would not be upgraded.

Sound Transit's *Sounder* commuter passenger trains will become operational in late 2012 between the Tacoma Dome Station at Freighthouse Square in Tacoma and Sound Transit's Lakewood Station (on the Point Defiance Bypass route) with as many as 18 *Sounder* trains per day.

What are the proposed improvements and related activities of the Point Defiance Bypass Project?

The Project consists of railroad track and support facility improvements, and the relocation of Amtrak's Tacoma Station. Exhibit 1 shows the components of the Build Alternative. The following details specific components of the Build Alternative.

- **Construct New Track Adjacent to the Existing Main Line** – A new 3.5-mile track adjacent to the existing main line would be constructed from South 66th Street (Rail MP 6.9) in Tacoma to between Bridgeport Way SW (Rail MP 10.4) and Clover Creek Drive SW (Rail MP 10.9) in Lakewood.
- **Reconstruct and Rehabilitate the Existing Main Line** – Starting just southwest of Bridgeport Way Southwest (Rail MP 10.4) in Lakewood, the existing track would be reconstructed to a location southeast of the I-5/Mounts Road Southwest interchange (Rail MP 19.8) at Nisqually Junction.

- **Improvements at at-Grade Crossings** – Several grade crossings would be improved with wayside horns, gates, traffic signals and signage, sidewalks, median separators, and warning devices. These crossings include Clover Creek Drive Southwest, North Thorne Lane Southwest, Berkeley Street Southwest, 41st Division Drive and Barksdale Avenue.
- **Tacoma Amtrak Station Relocation** – The existing Tacoma Amtrak Station would be relocated from its Puyallup Avenue location to the Tacoma Dome Station at Freighthouse Square, at 430 E. 25th Street in Tacoma.

What are the proposed operational changes that would result from the Point Defiance Bypass Project?

Amtrak's existing Cascades and Coast Starlight passenger train service would be rerouted from the Puget Sound route along the Puget Sound shoreline to the Point Defiance Bypass route. The Project would also provide for additional Amtrak Cascades service by increasing the number of round trips provided from 4 to 6, or a total of 12 Cascades service train trips. Amtrak Coast Starlight would also travel on the Point Defiance Bypass route for a total of two Coast Starlight service train trips. The speed of these passenger trains would be up to 79 mph.

Exhibit 1. Build Alternative Components

Chapter 2 – Methodology

This section provides an overview of wetland regulations and the study methods by which wetlands are described.

What regulatory authority applies to the Project?

Wetlands in the Project vicinity are subject to federal, state, and local regulations. The following sections outline the regulations applicable to the Project at each level of government. An in-depth list of environmental regulations is presented in Attachment A.

Federal Environmental Regulations

Wetlands and streams are considered Waters of the United States. Section 404 of the Clean Water Act (CWA) regulates placement of fill material in Waters of the United States, and is administered by the US Army Corps of Engineers (USACE).

Washington State Environmental Regulations

Activities that affect wetlands and streams may require a water quality certification (CWA Section 401), which is implemented at the state level by the Washington State Department of Ecology (Ecology). Ecology reviews projects for compliance with state water quality standards and makes permitting and minimization decisions based on the nature and extent of effects, and the type and quality of wetlands/streams being affected.

Activities that use, divert, obstruct, or change the flow of a Water of the State, including some wetlands, may also require a Hydraulic Project Approval (HPA) permit. The Washington State Department of Fish and Wildlife (WDFW) is responsible for implementing HPAs under the State Hydraulic Code.

In addition to the above regulatory requirements, Washington State Department of Transportation (WSDOT) projects are required to meet the requirements of the Governor's Executive Order 89-10 (Protection of Wetlands 1989) which commits state agencies to a no net loss policy, and the Governor's Executive Order 90-04 (Protection of Wetlands 1990) that requires state agencies to rigorously enforce wetland regulations.

To meet the requirements of these two Executive Orders, WSDOT has developed its own regulations to protect wetlands. These regulations are described in WSDOT Directive 31-12 Protection of Wetlands Action Plan (1990) and WSDOT's *Environmental Procedures Manual*, Section 431 (March 2006).

WSDOT has also entered into two Memoranda of Agreements (MOAs) with regulatory agencies to develop appropriate wetland minimization. The MOAs are the WSDOT Wetland Compensation Bank Program Memorandum of Agreement (1994) and the Alternative Mitigation Policy Guidance Interagency Implementing Agreement: State of Washington Alternative Mitigation Policy Guidance for Aquatic Permitting Requirements from Ecology and WDFW (2000).

Local Environmental Regulations

The Project passes through portions of the cities of Tacoma, Lakewood, and DuPont, federal military (Army) installations at Camp Murray and JBLM, and portions of unincorporated Pierce County. Municipal governments in the study area are required by the Growth Management Act to enact regulations to protect critical areas within their jurisdiction, including wetlands. The relevant code citations for these ordinances are presented in Attachment A.

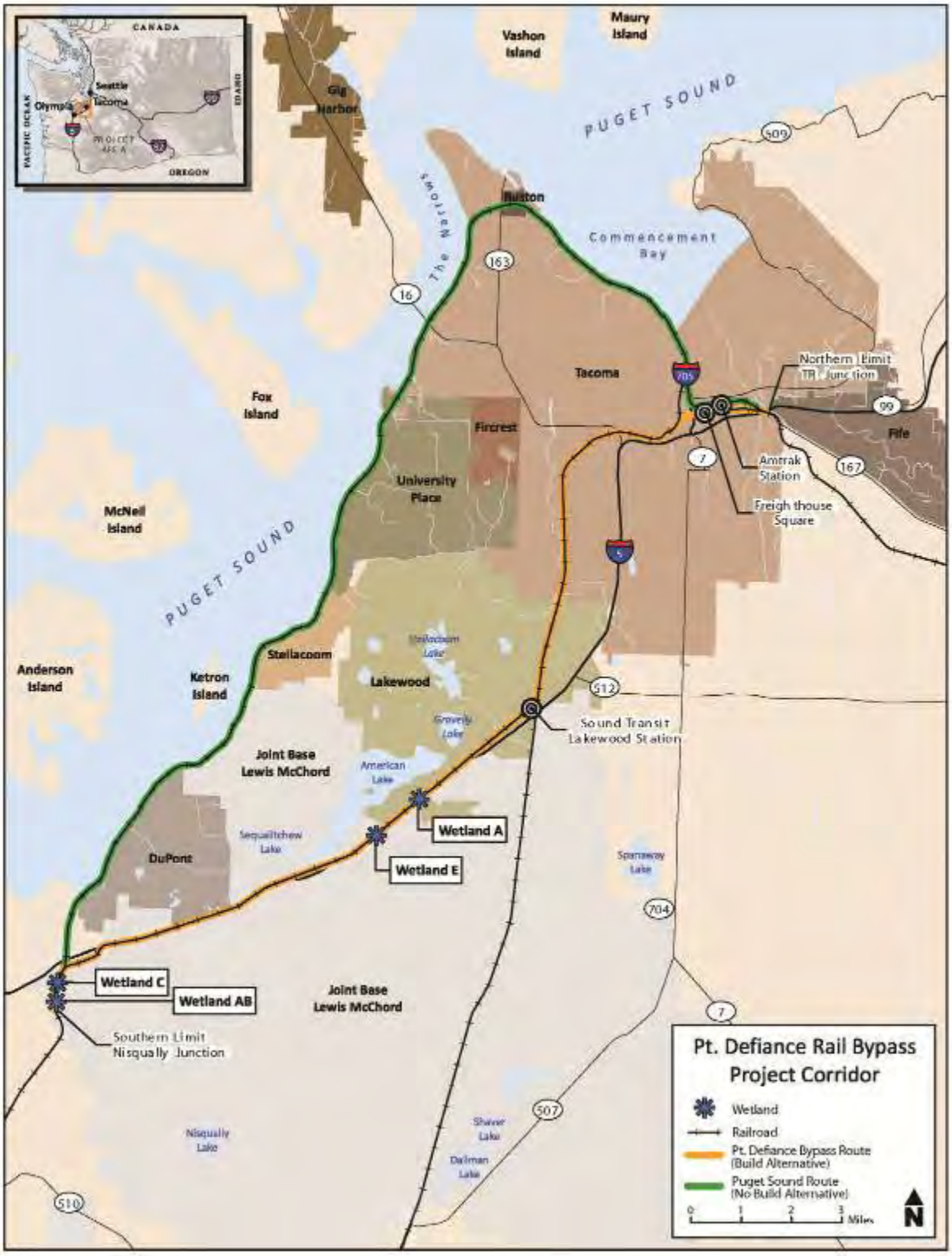
What is the study area for the Project?

The study area for the Project is defined as the railroad right-of-way, which varies in width from approximately 80-100 feet, along the proposed rail corridor between approximately Rail MP 38.24X near the crossing of I-5 over the Puyallup River in Tacoma to MP 24.7 in Pierce County near the crossing of Nisqually Road over the Nisqually River.

How was information about wetlands collected?

In August 2007, a Wetlands Technical Memorandum (WTM) was prepared by HDR Engineering, Inc. (HDR) for the Point Defiance Bypass Project that identified four wetlands within the Project right-of-way as defined at that time (see Exhibit 2), between approximately South 66th Street in Tacoma and the BNSF main line south of DuPont. Since 2007, the Project was subsequently expanded to include additional rail within the city limits of Tacoma from approximately South 66th Street north to the crossing of I-5 over the Puyallup River. As a result, the study area is the same as that evaluated by HDR in 2007 but also includes the new segment added within the developed city limits of Tacoma.

Exhibit 2. Project Wetland Locations



In order to provide a status update for the wetlands delineated by HDR and to determine if additional wetlands are present within the revised (expanded) study area, three field visits were conducted by WSDOT on March 10, April 14, and June 7, 2011.

Based on the information collected, including observation of the existing plant community, hydrology, soils, and wetland boundaries,[4] it is determined that no new wetlands are present within the revised (expanded) study area, and data presented by HDR in its 2007 WTM are still accurate in describing the four wetlands.

Accordingly, the wetland information presented in this report is, in large part, derived from HDR (2007), with updates incorporated where relevant.

Background Data

The following data sources were reviewed to provide background information on vegetation patterns, topography, drainage, and the potential for wetlands or wildlife habitats to occur in the Project vicinity:

- National Wetland Inventory (NWI) maps
- Inventory maps for Pierce County, the cities of Tacoma, Lakewood, and DuPont, and , Camp Murray, and JBLM
- US Geologic Survey (USGS) 7.5 minute topographic maps
- Natural Resources Conservation Service (NRCS) soils surveys and county hydric soils lists
- Aerial photography
- Correspondence with the US Fish and Wildlife Service (USFWS), NOAA Fisheries, WDFW, and the Washington State Department of Natural Resources (WDNR);
- Threatened, Endangered, and Sensitive (TES) species lists maintained by the WDNR Natural Heritage Program, the WDFW Priority Habitats and Species Program, and the USFWS and NMFS databases
- Cross Base Highway Final EIS (Parametrix 2003)

Wetland Delineation

Wetlands in the study area were delineated by HDR wetland scientists on November 17, December 12, and December 22, 2006, using the three parameter approach described in the *Washington State Wetlands*

[4] *Wetlands C and AB are located on BNSF property. WSDOT was escorted to these wetlands by BNSF on April 14, 2011, during which BNSF indicated that any updates to the wetland status shall be made by BNSF. As such, WSDOT's evaluation of these two wetlands was limited to a visual confirmation of the vegetative community, hydrology, and wetland boundary.*

Identification and Delineation Manual (Ecology 1997) and the *Corps of Engineers Wetland Delineation Manual* (USACE 1987).[5]

Wetland boundaries were marked with flagging tape, the acreages of which were determined based on GIS estimates. A detailed description of the field methods employed by HDR and WSDOT is provided in Attachment B.

HDR did not delineate wetlands outside the railroad right-of-way within federal reservations (JBLM and Camp Murray). In JBLM, existing documents were supplemented by a site review with on-site biologists. At Camp Murray, staff members indicated that no wetlands are located in the area, and access was not allowed. Copies of existing environmental documents were provided in lieu of field inspection.

The 2011 Project scope has not been modified to an extent that a wetland investigation is necessary outside the railroad right-of-way on the above federal reservations.

Wetland Classification and Rating

Wetlands were classified according to the system outlined by the USFWS in *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin 1979). The Cowardin system allows for the classification of wetlands based on their vegetative and hydrologic characteristics.

Wetland ratings are utilized by regulatory agencies to help determine wetland buffers, minimization replacement ratios and permitted uses in wetlands. Ratings are based on a wetland's sensitivity to disturbance, rarity within a region, functions, and values. Generally, wetlands that haven't been altered significantly by urbanization, have structural and spatial diversity, and are hydrologically connected to streams, have a high rating. Attachment C summarizes the wetland rating systems used by various agencies.

Wetland Functions and Values

The functions and values of delineated wetlands were evaluated using the *Wetland Functions Characterization Tool for Linear Projects* (Null 2000). The method integrates field observations and best professional judgment regarding 14 wetland functions, including hydrologic, biological, and cultural functions, to assign values of low, moderate or high.

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[5] *The results of the HDR wetland delineation were verified by WSDOT in the field on June 7, 2011. Verified data were transferred to current data sheets derived from the* Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region *(Version. 2.0).*

Hydrologic functions include flood flow alteration, sediment removal, nutrient and toxicant removal, erosion control, shoreline stabilization, and production and export of organic matter. *Biological* functions assessed include general habitat suitability, specific habitat suitability (aquatic invertebrates, amphibians, wetland mammals, wetland birds, and general fish habitat), and native plant richness. *Cultural* functions include educational or scientific use, uniqueness and heritage.

Wetland Buffers

Buffer widths are assigned to wetlands based on their rating. Wetland buffers are the adjacent areas that add value to wetlands insofar as they can remove sediments, nutrients, and toxics, influence microclimate, maintain transitional habitat, reduce the effect of nearby disturbances, and maintain habitat connectivity (Sheldon et al. 2003).

Wetland buffers are regulated by local jurisdictions. Pierce County and the cities of Tacoma, Lakewood, and DuPont have regulations that define and protect wetlands. There are no federal regulations requiring buffers for wetlands located on federal lands. As such, buffers for wetlands on federal lands, if applicable, are assigned based on Pierce County regulations in order to determine potential effects.

Chapter 3 – Affected Environment

Four wetlands were identified in the study area. A description of the characteristics of each wetland is provided in Exhibit 3. Wetland delineation forms are presented in Attachment D; site photographs are provided in Attachment E; wetland rating forms are available in Attachment F.

Exhibit 3. Wetland Descriptions

Wetland ID	Cowardin Classification[1,5] and HGM Class[2,5]	Estimated Size (Acres)[3,5]	Rating[4,5]	Jurisdiction and Buffer[6]
A	PSS Depressional	0.27	III	Lakewood 75 feet
E	PEM Riverine	0.3	III	Joint Base Lewis McChord (Pierce County) 80 feet
C	PFO Slope	1.7	IV	Pierce County 50 feet
AB	PFO Slope	1.2	III	Pierce County 80 feet

[1] *Cowardin et al. (1979).*
[2] *Hydrogeomorphic (HGM) Class (Brinson 1993).*
[3] *Wetland sizes are based on GIS estimates.*
[4] *Wetland ratings are based on Hruby (2004), and City of DuPont Municipal Code, DMC Chapter 25-105.*
[5] *Verified by WSDOT in April 2011.*
[6] *The buffer would end at the toe of the existing embankment.*

Wetland A

Wetland A is approximately 0.27 acre in size, and is located between the railroad and Union Avenue Southwest, just south of Thorne Lane Southwest. Wetland A is a depressional wetland dominated by scrub-shrub vegetation. The following description is based on delineation performed by HDR in 2006, supplemented with information from Parametrix (2003), and updated by WSDOT in 2011.

Vegetation

The scrub-shrub vegetation is dominated by Pacific willow (*Salix lucida* var. *lasiandra*) and Himalayan blackberry (*Rubus armeniacus*). Dominant herbaceous species include purple loosestrife (*Lythrum salicaria*), softstem bulrush (*Scirpus tabermontanii*), common cattail (*Typha latifolia*), and reed canarygrass (*Phalaris arundinacea*). Some areas of

shallow ponding are present on the east side of the wetland in which duckweed (*Lemna minor*) is dominant. The presence of these hydrophytic species meets the wetland vegetation criterion.

Hydrology

The primary source of hydrology is an unnamed tributary to American Lake that is culverted under I-5 from the east. The presence of surface saturation and inundation in 2006 and 2011 meet the wetland hydrology criterion.

Soils

Soils vary from a gray (10YR 5/1) gravelly silt loam that extends to a depth of 18 inches to very dark gray 10YR 3/1) gravelly sandy loam that extends to 12 inches overlying dark grayish brown (2.5Y 4/2) gravelly sandy loam with coarse, common, faint olive brown (2.5Y 4/3) redoxymorphic features. The low chroma colors of these soils and the presence of redoxymorphic features is indicative of hydric soils.

Buffer

Fill slopes surround Wetland A on all sides. The east edge of the wetland abuts the railroad fill prism. Undeveloped portions of the wetland buffer are dominated by a mixture of upland forest and shrub communities, dominated by black cottonwood (*Populus balsamifera*), red alder (*Alnus rubra*), Oregon white ash (*Fraxinus latifolia*), Oregon white oak (*Quercus garryiana*), and Douglas fir (Parametrix 2003). Himalayan blackberry is the dominant shrub in the buffer, particularly to the east along the railroad right-of-way. Soils in the buffers appear to be a mixture of fill material, and somewhat lighter colored (10YR 2/2 - 10YR 3/3) gravelly sandy loam.

Wetland E

Wetland E is located between the fill prisms of the railroad and I-5. The wetland is approximately 40 feet wide, 100 feet long, and encompasses approximately 0.3 acre. Wetland E is a riverine wetland dominated by an emergent plant community. The following description is based on delineation performed by HDR in 2006, updated by WSDOT in 2011.

Vegetation

Common cattail (*Typha latifolia*) and reed canarygrass (*Phalaris arundinaceae*) are the dominant emergent plants.

Hydrology

Wetland E receives water as overbank flow from Murray Creek. Culverts convey Murray Creek into and out of the wetland. Soils in Wetland E were inundated in 2006 and 2011. The presence of inundated areas meets the wetland hydrology criterion.

Soils

Soils are composed of a black (10YR 2/1) gravelly sandy loam that extends from the surface to a depth of 18 inches. The low chroma color of this soil is indicative of hydric soils.

Buffer

The fill slope for I-5 abuts Wetland E on the east, and the ballast slope of the existing rail line forms the western boundary. Undeveloped areas to the north and south occur within the maintained rights of way, dominated by mixed grasses, Scot's broom, and Himalayan blackberry.

Wetland C

Wetland C is located on BNSF property, adjacent to the eastern toe of the fill prism, and immediately south of the intersection of the railroad and Nisqually Road Southwest. The wetland varies from 20-50 feet wide, and is approximately 1.7 acres in size. Wetland C is classified as a slope wetland and is forested. The following description is based on delineation performed by HDR in 2006, updated by WSDOT in 2011.

Vegetation

Vegetation is dominated by red alder, Himalayan blackberry, and scouring rush (*Equisetum hymale*). The presence of these species meets the wetland vegetation criterion.

Hydrology

Water enters Wetland C as seepage from the slope immediately above the wetland to the east. Water then leaves the wetland via a ditch along the existing railroad ballast before being directed under the railroad through a culvert. Soils were saturated to the surface in 2006 and 2011, which meets the wetland hydrology criterion.

Soils

Soils are composed a gravelly silty clay loam. The A horizon is a dark grayish brown color (2.5Y 4/2) that extends from the surface to a depth of

eight inches. The B horizon is similar in color but has a few fine, distinct dark yellowish brown (10YR 4/4) redoxymorphic features. The low chroma colors of these soils and the presence of redoxymorphic features are indicative of hydric soils.

Buffer

The railroad fill slope abuts the wetland on the west, and natural slopes are present on the north, south, and east. Undeveloped portions of the buffer are dominated by a mixture of upland forest and shrub communities. The forested areas are dominated by red alder and Himalayan blackberry.

Wetland AB

Wetland AB is located on BNSF property, at the southern end of the study area, on the east side of the railroad, and south of the intersection of the railroad and Nisqually Road Southwest. Present at the bottom of a deep draw, and approximately 1.2 acres in size, Wetland AB is a depressional wetland and is forested. The following description is based on delineation performed by HDR in 2006, updated by WSDOT in 2011.

Vegetation

The vegetation in Wetland AB is dominated by red alder, salmonberry, and youth-on-age (*Tolmiea menziesii*). Bracken fern (*Pteridium aquilinum*), vine maple (*Acer circinatum*), and scouring rush are locally dominant. The presence of these species meets the wetland vegetation criterion.

Hydrology

Water enters Wetland AB as seepage from the slope immediately above the wetland to the east. It is also supplemented by a small, apparently seasonal stream on the east side. A debris dam detains water in the wetland. Water exits Wetland AB via a small stream that passes through an approximately 5-foot diameter concrete culvert in the northern end of the wetland. Soils were saturated to the surface in 2006 and 2011. The presence of surface saturation meets the wetland hydrology criterion.

Soils

Soils in Wetland AB are composed a gravelly sandy loam. The A horizon is a very dark gray color (10YR 3/1) that extends from the surface to a depth of 12 inches. The B horizon is a dark grayish brown (2.5Y 4/2) gravelly sandy loam with common, coarse, faint, olive brown (2.5Y 4/3) redoxymorphic features. The low chroma colors of these soils and the presence of redoxymorphic features are indicative of hydric soils.

Buffer

The slope for the existing railroad fill prism abuts Wetland AB on the west, and natural slopes are located to the north, south, and east. Undeveloped portions of the buffers are dominated by a mixture of upland forest and shrub communities. The forested areas are dominated by red alder, salmonberry, and sword fern. Stinging nettle (*Urtica dioica*), and licorice fern (*Polypodium glycyrrhiza*) are also present on the railroad prism. The eastern slope also includes Douglas fir and western red cedar. Although low chroma colors and redoxymorphic features were present, the soils west of Wetland AB were dry and appear to be well drained.

What functions do the wetlands provide?

The wetlands in the study area provide a variety of wetland functions. A summary of the functions is presented in Exhibit 4, and detailed function assessment forms can be found in Attachment G.

Exhibit 4. Wetland Functions

Wetland Name	Flood Storage and Flow Alteration	Sediment Removal	Nutrient/Toxicant Removal	Erosion Control and Shoreline Stabilization	Organic Production and Export	General Habitat Suitability	Habitat – Aquatic Invertebrates	Habitat - Amphibians	Habitat - Mammals	Habitat - Birds	Habitat – General Fish	Native Plant Richness	Educational/Scientific Use	Uniqueness/Heritage
A	M	L	L	L	M	L	L,M	M	L,M	L	M	L,M	--	--
E	L	L	L	--	L	L,M	L	L	--	L	L,M	--	--	--
C	--	--	--	--	L,M	L,M	--	L	--	--	--	--	--	--
AB	L,M	M	--	M	M	M	H	M,H	--	M	--	L	--	--

Functions are qualitatively rated as: -- (None), L (Low), M (Moderate), or H (High).

Chapter 4 – Potential Project Effects

Effects to wetlands and buffers are assessed by examining the potential for disturbance within the Project footprint, including the extent of wetland and/or buffer to be cleared, filled, and/or excavated, or temporarily disturbed.

Would the Project affect wetlands or wetland buffers?

No Build Alternative

No direct, indirect, or cumulative effects to wetlands or wetland buffers would result. Amtrak service would continue to operate on the Puget Sound route within a landscape disturbed by development and urban activity. No additional construction or maintenance activities would result from the No Build Alternative.

Build Alternative

Although all four wetlands occur within the railroad right-of-way and adjacent to the fill prism, all Project activities near the wetlands would be restricted to the fill prism. As such, the wetlands would not be subject to excavation or fill, and wetland buffers would not be impacted.

Construction effects to wetlands could occur as a result of the Project and result in a short-term loss of wetland functions associated with habitat and water quality. Ground disturbance could result in erosion of disturbed soils into wetlands and buffer areas, impairing vegetation and habitat. Clearing and grading activities in the vicinity of wetlands would have the potential to affect surface water quality during seasonal events when surface water is present. However, these effects would be avoided or minimized through the use of Best Management Practices (BMPs) described below in Chapter 5.

The Project would facilitate an increase in rail capacity, resulting in a corresponding increase in visual disturbance and noise. This disturbance could marginally reduce the suitability of wetland habitat. However, the wetlands are already subject to baseline disturbance from traffic on I-5, local roads, and/or the existing rail line and currently offer low quality habitat. Thus, the disruption added by an increase in rail capacity is not expected to affect wetlands.

What potential indirect and cumulative effects could occur from the Project?

Indirect Effects

The Project is located within an existing rail corridor and urbanized area. The only potential indirect effect tied to the Project is that it may indirectly influence redevelopment near the relocated Amtrak Station at Freighthouse Square (see Land Use Discipline Report[6]). Such redevelopment would be consistent with local zoning and approved by state and local agencies and would take place in previously disturbed areas where wetlands are not present. Thus, no indirect effects to wetland resources are expected.

Cumulative Effects

The Project would have no direct or indirect effect on wetlands. Thus, the Project would not contribute to a cumulative effect on these resources.

[6] *WSDOT 2012*

Chapter 5 – Recommended Minimization Measures

Since no permanent or temporary effects to wetlands or wetland buffers are expected, minimization and compensation will not be required.

BMPs will be included in the final design to address the potential for construction work to temporarily affect wetlands or wetland buffers.

Best Management Practices

The following BMPs will be implemented during construction in order to address the potential for wetland effects:

- Construction effects will be confined to the minimum area necessary to complete the Project and clearing limits will be clearly marked by staking done by the contractor's surveyor. Areas of landscape or vegetative preservation will be protected with construction fencing.
- Sensitive areas such as the four identified wetlands within the Project limits will be protected from any intrusion by construction fencing.
- A Temporary Sediment and Erosion Control (TESC) Plan and Stormwater Site Plan will be developed and implemented for all projects requiring clearing, vegetation removal, grading, ditching, filling, embankment compaction or excavation. The BMPs in the plans will be used to control sediments from all vegetation or ground disturbing activities.
- BMPs will be implemented for construction activities that occur within 150 feet of surface water or wetland habitat as identified by the Project biologist, to ensure that no foreign material, such as railroad ballast or other material is sidecast, and to control and prevent sediments from entering aquatic systems.
- No contractor staging areas will be allowed within 300 feet of any jurisdictional wetland, stream, river, or drainage, as identified by the Project biologist, unless site-specific review completed by the Project biologist indicates that no effects to the sensitive resource areas will occur due to topography or other factors.
- Application of chemicals such as fertilizers and pesticides will be conducted in a manner and at application rates that will not result in loss of chemicals to stormwater runoff.

- Highly turbid or contaminated dewatering water will be handled separately from stormwater and not allowed to enter local drainage systems.

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Attachment A – Regulatory Authority

Regulation	Agency Oversight	Resource Protected
	Federal	
NEPA, 42 USC 4321	**Federal agencies**	**Major actions sponsored, funded, permitted, or approved by federal agencies**
Clean Water Act, 33 USC 1251, Section 401	**US Army Corps of Engineers (USACE) (administered by Ecology)**	**Waters of the United States**
Clean Water Act, 33 USC 1344, Section 404	**USACE**	**Waters of the United States, including wetlands**
Rivers and Harbors Act, Section 10, 33 USC 403, 407	**US Coast Guard**	**Navigable waters**
DOT Order 5660.1a	**Federal Highway Administration (FHWA)**	**Preservation of the Nation's wetlands**
CZMA, 6 USC 1451, 15 CFR 923-930	**USACE (or other federal permitting agency), Ecology**	**Coastal zones**
Endangered Species Act, Section 7	**USFWS, NOAA Fisheries**	**Listed plant and animal species, their habitats, and food resources**
	State	
SEPA, WAC 197-11 and 468-12	**WSDOT**	**Major actions sponsored, funded, permitted, or approved by state/local agencies**
Governor's Executive Order 89-10 (Protection of Wetlands), 1989	**WSDOT, Ecology**	**Wetlands**
Governor's Executive Order 90-04 (Protection of Wetlands), 1990	**WSDOT, Ecology**	**Wetlands**
Washington State Water Pollution Control Act, RCW 90.48	**Ecology**	**Waters of the State**
Washington State Growth Management Act (GMA), RCW 36.70A	**Local Agencies**	**Critical areas including wetlands and buffers**
Shoreline Management Act, RCW 90.58	**Ecology**	**All fish and wildlife within designated shoreline zones**
Coastal Zone Management	**See Federal Regulations**	**See Federal Regulations**
Wetland Mitigation Banking, RCW 90.84 (WAC 173-700)	**Ecology**	**Mitigation banks**
Hydrologic Permit Approval (HPA)	**WDFW**	**Waters of the State**
Aquatic Use Authorization	**Washington State Department of Natural Resources**	**State-owned aquatic lands**
WSDOT Directive 31-12 (Protection of Wetlands Action Plan), 1990	**WSDOT**	**Wetlands**

Regulation	Agency Oversight	Resource Protected
Intergovernmental Agreements		
Alternative Mitigation Policy Guidance for Aquatic Permitting, 2000	**WSDOT, Ecology, WDFW**	**Wetland mitigation**
Wetland Mitigation Banking Memorandum of Agreement, 1994	**USACE, Ecology, FHWA, NMFS, US Environmental Protection Agency, USFWS, WDFW**	**Wetland mitigation banks**
Local		
DuPont Municipal Code Land Use Code (Sensitive Areas), DMC Chapter25-105	**City of DuPont**	**Sensitive areas including wetlands, streams, and buffers**
City of Lakewood Municipal Code Environmental Protection, Chapter 14A	**City of Lakewood**	**Sensitive areas including wetlands, streams, and buffers**
Pierce County Code Development Regulations (Critical Areas), Title 18E.30	**Pierce County**	**Critical areas including wetlands, streams, and buffers**
City of Tacoma Municipal Code Critical Areas Preservation, Title 13.11	**City of Tacoma**	**Critical areas including wetlands, streams, and buffers**

Attachment B – Field Methodology

In 2006, wetlands were identified and delineated using the three parameter method described in *Washington State Wetland Identification and Delineation Manual* (Ecology, 1997). HDR Engineering, Inc., staff collected data for each of the three parameters (hydrophytic vegetation, hydric soils, and wetland hydrology) in areas that represent typical site conditions. Staff collected additional data in associated uplands as needed to confirm wetland boundaries. These data were recorded on standard wetland delineation data sheets.

Vegetation

The dominant plants and their wetland indicator status were evaluated to determine if the vegetation was hydrophytic. Hydrophytic vegetation is defined as vegetation adapted to wetland conditions. To meet the hydrophytic vegetation criterion, more than 50 percent of the dominant plants must be Facultative, Facultative Wetland, or Obligate, based on the wetland indicator category assigned to each plant species by the USFWS (Reed 1997). Definitions of the indicator categories follow:

Obligate Wetland Plants (OBL) - Plants that almost always (> 99 percent of the time) occur in wetlands, but which may rarely (< 1 percent of the time) occur in non-wetlands.
Facultative Wetland Plants (FACW) - Plants that often (67 percent to 99 percent of the time) occur in wetlands, but sometimes (1 percent to 33 percent of the time) occur in non-wetlands.
Facultative Plants (FAC) - Plants with a similar likelihood (34 percent to 66 percent of the time) of occurring in both wetlands and non-wetlands.
Facultative Upland Plants (FACU) - Plants that sometimes (1 percent to 33 percent of the time) occur in wetlands, but occur more often (67 percent to 99 percent of the time) in non-wetlands.
Upland Plants (UPL) - Plants that rarely (< 1 percent of the time) occur in wetlands, and almost always (> 99 percent of the time) occur in non-wetlands.

HDR biologists used *A Field Guide to the Common Wetland Plants of Western Washington and Northwest Oregon* (Cooke, 1997) and *Plants of the Pacific Northwest* (Pojar and MacKinnon, 1994) as field references to assist with plant identification. Scientific and common plant names follow currently accepted nomenclature. Most names are consistent with *Flora of*

the Pacific Northwest (Hitchcock and Cronquist, 1973) and the PLANTS Database (USDA, 2011).

Hydrology

Project staff examined the area for evidence of hydrology. Wetland hydrology criteria were considered to be satisfied if it appeared that the soil was seasonally inundated or saturated to the surface for a consecutive number of days greater than or equal to 12.5 percent of the growing season. The growing season begins when the soil reaches a temperature of 41 degrees Fahrenheit in the zone of root penetration. The growing season in low elevations in western Washington is typically considered to be from March 1 to October 31 (244 days) (Ecology 1997). Primary indicators of hydrology include surface inundation and saturated soils. Secondary indicators of hydrology include drainage patterns, watermarks on vegetation, water-stained leaves, and oxidized root channels.

Soils

Generally, an area must contain hydric soils to be a wetland. Hydric soil forms when soils are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part (12 inches). Biological activities in saturated soil result in reduced oxygen concentrations and organisms turn to anaerobic processes for metabolism. Over time, anaerobic biological processes result in certain soil color patterns, which are used as indicators of hydric soil. Typically, low-chroma colors are formed in the soil matrix, and bright-colored redoximorphic features form within the matrix. Soil colors at sample locations were determined using the Munsell Color Chart. Other important hydric soil indicators observed in the field were recorded. Examples of these indicators include organic matter accumulations in the surface horizon, reduced sulfur odors, and organic matter staining in the subsurface (NRCS, 2003).

Boundary Identification

The delineated wetland boundaries were flagged with sequentially numbered, bright pink flagging. Boundaries were numbered in the order in which they were encountered in the field, and numbering does not necessarily reflect geographic location. Data plot locations were flagged with blue and white striped flagging and labeled with the wetland and plot number.

2011 WSDOT Wetland Verification

In order to provide a status update for the wetlands delineated by HDR in 2006 and to determine if additional wetlands were present within the

revised (expanded) study area, three field visits were conducted by WSDOT on March 10, April 14, May 5, and June 7, 2011.

Evidence of wetland vegetation and hydrology were visually verified. Soil test pits were dug to match soils colors against those described by HDR in its 2007 WTM. Wetland boundaries observed in the field were compared to the 2007 WTM maps and wetland descriptions. Based on the information collected in 2011, including observation of the existing plant community, hydrology, soils, and wetland boundaries,[7] it is determined that no new wetlands are present within the revised (expanded) study area, and data presented by HDR in its 2007 WTM is still accurate in describing the four wetlands. Updated delineation forms are provided in Attachment 4.

[7] *Wetland C and Wetland AB are located on BNSF property. WSDOT was escorted to these wetlands by BNSF on April 14, 2011, during which BNSF indicated that any updates to the wetland status shall be made by BNSF. As such, WSDOT's evaluation was limited to a visual confirmation of the vegetative community, hydrology, and wetland boundary.*

Attachment C – Wetland Rating System

Regulatory Agency	Category			
	I	*II*	*III*	*IV*
Washington State Department of Ecology[8,9]	**Category I wetlands represent a unique or rare wetland type; or are more sensitive to disturbance than most wetlands; or are relatively undisturbed and contain ecological attributes that are impossible to replace within a human lifetime; or provide a high level of functions.** **Specific wetlands that meet the Category I criteria include:** **1. Relatively undisturbed estuarine wetlands over one acre in size; or** **2. Natural Heritage Wetlands, specifically, Wetlands identified by the Washington Natural Heritage Program/WDNR as high quality relatively undisturbed wetlands; and Wetlands that support State listed threatened or endangered plants;** **3. Bogs;** **4. Mature and old-growth forested wetlands over one acre in size;** **5. Wetlands in coastal lagoons; and** **6. Wetlands that perform many functions very well, as indicated by a score of 70 or more points out of 100 on the wetland rating form.**	**Category II wetlands are difficult, though not impossible; to replace, and provide high levels of some functions.** **Specific wetlands that meet the Category II criteria include:** **1. Estuarine wetlands less than one acre in size, or disturbed estuarine wetlands larger than one acre;** **2. Interdunal wetlands greater than one acre; and** **3. Wetlands scoring between 51 and 69 points out of 100.**	**Category III wetlands provide a moderate level of functions.** **Specific wetlands that meet the Category III criteria include:** **1. Wetlands scoring between 30 and 50 points out of 100 on the wetland rating form; and** **2. Interdunal wetlands between 0.1 acre and 1.0 acre in size.**	**Category IV wetlands have the lowest levels of functions and are heavily disturbed.** **Specific wetlands that meet the Category IV criteria include:** **1. Wetlands scoring less than 30 points out of 100 on the wetland rating form.**
City of DuPont[10]	**These are wetlands that are very valuable for a particular rare species or represent a high quality example of a rare wetland type or are rare within the region or provide irreplaceable functions and values, i.e., they are impossible to replace within a human lifetime, if at all.**	**These are wetlands that provide habitat for very sensitive or important wildlife or plants or are difficult to replace or provide very high functions and values, particularly for wildlife habitat and/or their association with ground water and aquifers. These wetlands occur more commonly than Class I wetlands and need a high level of protection.**	**Not Implemented**	**City of DuPont[34]**

[8] *Hruby (2004).*
[9] *The Washington State Wetland Rating System for Western Washington (Hruby 2004) has been adopted by the cities of Tacoma, Lakewood and Pierce County.*
[10] *City of DuPont Municipal Code, DMC Chapter 25-105.*

Attachment D – Wetland Delineation Forms

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

Project Site: Point Defiance Bypass City/County: Lakewood/Pierce Sampling Date: 6/7/2011
Applicant/Owner: WSDOT State: WA Sampling Point: A-U1
Investigator(s): Geoffrey T. Gray Section, Township, Range: S15-T19N-R2E
Landform (hillslope, terrace, etc.): hillslope - fill embankment Local relief (concave, convex, none): none Slope (%): 30-40
Subregion (LRR): A Lat: 47.1269 Long: -122.5440 Datum: ____
Soil Map Unit Name: Spanaway gravelly sandy loam NWI classification: none
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks: Wetland A is located at the intersection of I-5 and N Thorne Lane SW. The wetland is supported by stream overflow restricted to a concave bowl formed by raised fill embankments on all sides. SE (railroad) embankment dominated by Himalayan blackberry.

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. ____	____	____	____
2. ____	____	____	____
3. ____	____	____	____
4. ____	____	____	____
50% = ____, 20% = ____	____	= Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1. ____	____	____	____
2. ____	____	____	____
3. ____	____	____	____
4. ____	____	____	____
5. ____	____	____	____
50% = ____, 20% = ____	____	= Total Cover	
Herb Stratum (Plot size: ____)			
1. ____	____	____	____
2. ____	____	____	____
3. ____	____	____	____
4. ____	____	____	____
5. ____	____	____	____
6. ____	____	____	____
7. ____	____	____	____
8. ____	____	____	____
9. ____	____	____	____
10. ____	____	____	____
11. ____	____	____	____
50% = ____, 20% = ____	____	= Total Cover	
Woody Vine Stratum (Plot size: 10 ft x 10 ft)			
1. *Rubus armeniacus*	100	yes	FACU
2. ____	____	____	____
50% = 50, 20% = 20	100	= Total Cover	
% Bare Ground in Herb Stratum 100			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	1	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	0	(A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ☐ No ☒

Remarks:

US Army Corps of Engineers Western Mountains, Valleys, and Coast – Version 2.0

Project Site: Point Defiance Bypass

SOIL

Sampling Point: A-U1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-12+	10YR 3/3	100	=	=	=	=	GSL*	*gravelly sandy loam - embankment fill

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: ____

Depth (inches): ____

Hydric Soils Present? Yes ☐ No ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes ☐	No ☒	Depth (inches): ____		
Water Table Present?	Yes ☐	No ☒	Depth (inches): ____		
Saturation Present? (includes capillary fringe)	Yes ☐	No ☒	Depth (inches): ____	**Wetland Hydrology Present?**	Yes ☐ No ☒

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

Remarks:

US Army Corps of Engineers — Western Mountains, Valleys, and Coast – Version 2.0

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

Project Site: Point Defiance Bypass City/County: Lakewood/Pierce Sampling Date: 6/7/2011
Applicant/Owner: WSDOT State: WA Sampling Point: A-W1
Investigator(s): Geoffrey T. Gray Section, Township, Range: S15-T19N-R2E
Landform (hillslope, terrace, etc.): depression - stream channel Local relief (concave, convex, none): concave Slope (%): 0-5
Subregion (LRR): A Lat: 47.1269 Long: -122.5441 Datum: ____
Soil Map Unit Name: Spanaway gravelly sandy loam NWI classification: none
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks: Wetland A is located at the intersection of I-5 and N Thorne Lane SW. The wetland is supported by stream overflow restricted to a concave bowl formed by raised fill embankments on all sides. Heavily vegetated with trees, shrubs, and emergent. Contains perennial water.

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 30 ft x 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus balsamifera*	25	yes	FAC
2. *Salix lucida ssp lasiandra*	75	yes	FACW
3. ____	____	____	____
4. ____	____	____	____
50% = 50, 20% = 20	100	= Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1. ____	____	____	____
2. ____	____	____	____
3. ____	____	____	____
4. ____	____	____	____
5. ____	____	____	____
50% = ____, 20% = ____	____	= Total Cover	
Herb Stratum (Plot size: 10 ft x 10 ft)			
1. *Phalaris arundinaceae*	60	yes	FACW
2. *Typha latifolia*	20	yes	OBL
3. ____	____	____	____
4. ____	____	____	____
5. ____	____	____	____
6. ____	____	____	____
7. ____	____	____	____
8. ____	____	____	____
9. ____	____	____	____
10. ____	____	____	____
11. ____	____	____	____
50% = 40, 20% = 16	80	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1. ____	____	____	____
2. ____	____	____	____
50% = ____, 20% = ____	____	= Total Cover	
% Bare Ground in Herb Stratum 20			

Dominance Test Worksheet:

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

Prevalence Index worksheet:

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

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks:

US Army Corps of Engineers Western Mountains, Valleys, and Coast – Version 2.0

Project Site: Point Defiance Bypass

SOIL

Sampling Point: A-W1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-4	2.5Y 3/2	100	—	—	—	—	GSL*	*gravelly sandy loam
4-10+	10YR 5/1	100	—	—	—	—	GSL*	*gravelly sandy loam

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: ____

Depth (inches): ____

Hydric Soils Present? Yes ☒ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes ☐	No ☒	Depth (inches):	____	
Water Table Present?	Yes ☒	No ☐	Depth (inches):	11	
Saturation Present? (includes capillary fringe)	Yes ☒	No ☐	Depth (inches):	3	**Wetland Hydrology Present?** Yes ☒ No ☐

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

Remarks:

US Army Corps of Engineers — Western Mountains, Valleys, and Coast – Version 2.0

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

Project Site: Point Defiance Bypass Project City/County: /Pierce Sampling Date: 6/7/2011
Applicant/Owner: WSDOT Rail State: WA Sampling Point: C-U1
Investigator(s): G. Gray Section, Township, Range: T16N-R1E
Landform (hillslope, terrace, etc.): fill slope Local relief (concave, convex, none): ___ Slope (%): 30
Subregion (LRR): LRR A Lat: 47.0716 Long: -122.6943 Datum: ___
Soil Map Unit Name: not mapped NWI classification: none
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks: Sample point taken on existing railroad ballast fill prism.

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: none)	Absolute % Cover	Dominant Species?	Indicator Status
1. ___	___	___	___
2. ___	___	___	___
3. ___	___	___	___
4. ___	___	___	___
50% = ___ 20% = ___	___	= Total Cover	
Sapling/Shrub Stratum (Plot size: none)			
1. ___	___	___	___
2. ___	___	___	___
3. ___	___	___	___
4. ___	___	___	___
5. ___	___	___	___
50% = ___ 20% = ___	___	= Total Cover	
Herb Stratum (Plot size: none)			
1. ___	___	___	___
2. ___	___	___	___
3. ___	___	___	___
4. ___	___	___	___
5. ___	___	___	___
6. ___	___	___	___
7. ___	___	___	___
8. ___	___	___	___
9. ___	___	___	___
10. ___	___	___	___
11. ___	___	___	___
50% = ___ 20% = ___	___	= Total Cover	
Woody Vine Stratum (Plot size: none)			
1. ___	___	___	___
2. ___	___	___	___
50% = ___ 20% = ___	___	= Total Cover	
% Bare Ground in Herb Stratum ___			

Dominance Test Worksheet:

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

Prevalence Index worksheet:

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

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ☐ No ☒

Remarks: No vegetation is present on the maintained railroad ballast fill prism.

US Army Corps of Engineers Western Mountains, Valleys, and Coast – Version 2.0

Project Site: Point Defiance Bypass Project

SOIL

Sampling Point: C-U1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-12"	*	100	—	—	—	—	rock	ballast rock of railroad fill prism

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: ____

Depth (inches): ____

Hydric Soils Present? Yes ☐ No ☒

Remarks: * No pit dug due to presence of ballast rock fill material.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes ☐	No ☒	Depth (inches): ____		
Water Table Present?	Yes ☐	No ☒	Depth (inches): ____		
Saturation Present? (includes capillary fringe)	Yes ☐	No ☒	Depth (inches): ____	**Wetland Hydrology Present?**	Yes ☐ No ☒

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

Remarks: No soil pit dug due to presence of ballast rock fill material.

US Army Corps of Engineers — Western Mountains, Valleys, and Coast – Version 2.0

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

Project Site: Point Defiance Bypass Project City/County: /Pierce Sampling Date: 6/7/2011
Applicant/Owner: WSDOT Rail State: WA Sampling Point: C-W1
Investigator(s): G. Gray Section, Township, Range: DLC43-T18N-R1E
Landform (hillslope, terrace, etc.): swale bottom Local relief (concave, convex, none): concave Slope (%): 30
Subregion (LRR): A Lat: 47.0716 Long: -122.6942 Datum: ____
Soil Map Unit Name: not mapped NWI classification: none
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks: Sample point taken along ditch at railroad rock ballast toe.

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: none)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Alnus rubra*	50	yes	FAC
2. ____	____	____	____
3. ____	____	____	____
4. ____	____	____	____
50% = 25, 20% = 10	50	= Total Cover	
Sapling/Shrub Stratum (Plot size: none)			
1. ____	____	____	____
2. ____	____	____	____
3. ____	____	____	____
4. ____	____	____	____
5. ____	____	____	____
50% = ____, 20% = ____	____	= Total Cover	
Herb Stratum (Plot size: none)			
1. *Equisetum hymale*	50	yes	FACW
2. *Typha latifolia*	50	yes	OBL
3. ____	____	____	____
4. ____	____	____	____
5. ____	____	____	____
6. ____	____	____	____
7. ____	____	____	____
8. ____	____	____	____
9. ____	____	____	____
10. ____	____	____	____
11. ____	____	____	____
50% = 50, 20% = 20	100	= Total Cover	
Woody Vine Stratum (Plot size: none)			
1. *Rubus armeniacus*	50	yes	FACU
2. ____	____	____	____
50% = 25, 20% = 10	50	= Total Cover	
% Bare Ground in Herb Stratum 0			

Dominance Test Worksheet:

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

Prevalence Index worksheet:

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

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ☒ No ☒

Remarks:

US Army Corps of Engineers Western Mountains, Valleys, and Coast – Version 2.0

Project Site: Point Defiance Bypass Project

SOIL

Sampling Point: C-W1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-8	2.5Y 4/2	100	–	–	–	–	GSC loam*	* gravelly silty clay loam
8-16+	2.5Y 4/2	95	10YR 4/4	5	C	M	GSC loam*	* gravelly silty clay loam

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: ____

Depth (inches): ____

Hydric Soils Present? Yes ☒ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes ☐	No ☒	Depth (inches): ____		
Water Table Present?	Yes ☒	No ☐	Depth (inches): 12		
Saturation Present? (includes capillary fringe)	Yes ☒	No ☐	Depth (inches): 1	**Wetland Hydrology Present?**	Yes ☒ No ☐

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

Remarks:

US Army Corps of Engineers — Western Mountains, Valleys, and Coast – Version 2.0

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

Project Site: Point Defiance Bypass City/County: unincorporated Pierce Sampling Date: 5/5/2011
Applicant/Owner: WSDOT State: WA Sampling Point: E-U1
Investigator(s): Geoffrey T. Gray Section, Township, Range: S21-T19N-R2E
Landform (hillslope, terrace, etc.): hillslope - fill embankment Local relief (concave, convex, none): ____ Slope (%): 30-40
Subregion (LRR): A Lat: 47.1165 Long: -122.5614 Datum: ____
Soil Map Unit Name: not mapped NWI classification: none
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks: Wetland E is located on the banks of Murray Creek between the fill embankments of I-5 and the railroad.

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. ____	____	____	____
2. ____	____	____	____
3. ____	____	____	____
4. ____	____	____	____
50% = ____, 20% = ____	____	= Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1. ____	____	____	____
2. ____	____	____	____
3. ____	____	____	____
4. ____	____	____	____
5. ____	____	____	____
50% = ____, 20% = ____	____	= Total Cover	
Herb Stratum (Plot size: 10 ft x 10 ft)			
1. *Equisetum telmateia*	60	yes	FACW
2. ____	____	____	____
3. ____	____	____	____
4. ____	____	____	____
5. ____	____	____	____
6. ____	____	____	____
7. ____	____	____	____
8. ____	____	____	____
9. ____	____	____	____
10. ____	____	____	____
11. ____	____	____	____
50% = 30, 20% = 12	60	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1. *Rubus armeniacus*	20	yes	FACU
2. ____	____	____	____
50% = 10, 20% = 9	20	= Total Cover	

% Bare Ground in Herb Stratum 40

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	50	(A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ☐ No ☒

Remarks: Dominance = 50% which DOES NOT EXCEED 50% as required by the Dominance Test. Equisetum is rooted into the ballast rock fill material. Bare ground in herb stratum is comprised of ballast rock fill material.

US Army Corps of Engineers Western Mountains, Valleys, and Coast – Version 2.0

Project Site: Point Defiance Bypass

SOIL

Sampling Point: E-U1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-12+	*	100	—	—	—	—	rock	* rock ballast of fill embankment

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: ____

Depth (inches): ____

Hydric Soils Present? Yes ☐ No ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes ☐	No ☒	Depth (inches): ____		
Water Table Present?	Yes ☐	No ☒	Depth (inches): ____		
Saturation Present? (includes capillary fringe)	Yes ☐	No ☒	Depth (inches): ____	**Wetland Hydrology Present?**	Yes ☐ No ☒

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

Remarks:

US Army Corps of Engineers — Western Mountains, Valleys, and Coast – Version 2.0

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

Project Site: Point Defiance Bypass City/County: unincorportated/Pierce Sampling Date: 5/5/2011
Applicant/Owner: WSDOT State: WA Sampling Point: E-W1
Investigator(s): Geoffrey T. Gray Section, Township, Range: S21-T19N-R2E
Landform (hillslope, terrace, etc.): depression - stream channel Local relief (concave, convex, none): concave Slope (%): 0-5
Subregion (LRR): A Lat: 47.1165 Long: -122.5613 Datum: ____
Soil Map Unit Name: ____ NWI classification: none
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks: Wetland E is located on the banks of Murray Creek between the fill embankments of I-5 and the railroad. Heavily vegetated with cattails and reed canarygrass. Perennial water.

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. ____	____	____	____
2. ____	____	____	____
3. ____	____	____	____
4. ____	____	____	____
50% = ____, 20% = ____	____	= Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1. ____	____	____	____
2. ____	____	____	____
3. ____	____	____	____
4. ____	____	____	____
5. ____	____	____	____
50% = ____, 20% = ____	____	= Total Cover	
Herb Stratum (Plot size: 10 ft x 10 ft)			
1. *Phalaris arundinacea*	60	yes	FACW
2. *Typha latifolia*	40	yes	OBL
3. ____	____	____	____
4. ____	____	____	____
5. ____	____	____	____
6. ____	____	____	____
7. ____	____	____	____
8. ____	____	____	____
9. ____	____	____	____
10. ____	____	____	____
11. ____	____	____	____
50% = 50, 20% = 20	100	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1. ____	____	____	____
2. ____	____	____	____
50% = ____, 20% = ____	____	= Total Cover	
% Bare Ground in Herb Stratum 0			

Dominance Test Worksheet:

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

Prevalence Index worksheet:

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

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks:

US Army Corps of Engineers Western Mountains, Valleys, and Coast – Version 2.0

Project Site: Point Defiance Bypass

SOIL

Sampling Point: E-W1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-12+	10YR 2/1	100	—	—	—	—	GSL*	*gravelly sandy loam

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: ____

Depth (inches): ____

Hydric Soils Present? Yes ☒ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes ☐	No ☒	Depth (inches):	____	
Water Table Present?	Yes ☒	No ☐	Depth (inches):	12	
Saturation Present? (includes capillary fringe)	Yes ☐	No ☒	Depth (inches):	2	**Wetland Hydrology Present?** Yes ☒ No ☐

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

Remarks:

US Army Corps of Engineers — Western Mountains, Valleys, and Coast – Version 2.0

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

Project Site: Point Defiance Bypass Project City/County: ____ /Pierce Sampling Date: 6/7/2011
Applicant/Owner: WSDOT Rail State: WA Sampling Point: AB-U1
Investigator(s): G. Gray Section, Township, Range: DLC43-T16N-R1E
Landform (hillslope, terrace, etc.): fill slope Local relief (concave, convex, none): ____ Slope (%): 35
Subregion (LRR): LRR A Lat: 47.0667 Long: -122.6947 Datum: ____
Soil Map Unit Name: not mapped NWI classification: none
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks: Sample point taken on existing railroad fill prism, upslope of fill toe.

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: none)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Alnus rubra*	70	yes	FAC
2. ____	____	____	____
3. ____	____	____	____
4. ____	____	____	____
50% = 35, 20% = 14	70	= Total Cover	
Sapling/Shrub Stratum (Plot size: none)			
1. *Rubus spectabilis*	75	yes	FAC
2. ____	____	____	____
3. ____	____	____	____
4. ____	____	____	____
5. ____	____	____	____
50% = 37.5, 20% = 15	75	= Total Cover	
Herb Stratum (Plot size: none)			
1. *Polystichum munitum*	20	yes	FACU
2. *Polypodium glycyrrhiza*	15	no	NL (UPL)
3. ____	____	____	____
4. ____	____	____	____
5. ____	____	____	____
6. ____	____	____	____
7. ____	____	____	____
8. ____	____	____	____
9. ____	____	____	____
10. ____	____	____	____
11. ____	____	____	____
50% = 17.5, 20% = 7	35	= Total Cover	
Woody Vine Stratum (Plot size: none)			
1. ____	____	____	____
2. ____	____	____	____
50% = ____, 20% = ____	____	= Total Cover	
% Bare Ground in Herb Stratum 0 *			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	67	(A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks: * Moss exhibits 100% cover in open areas of the herbaceous layer.

US Army Corps of Engineers Western Mountains, Valleys, and Coast – Version 2.0

Project Site: Point Defiance Bypass Project

SOIL

Sampling Point: AB-U1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-13+	10YR 3/3	100	=	=	=	=	GL *	* gravelly loam with coarse gravels

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: ____

Depth (inches): ____

Hydric Soils Present? Yes ☐ No ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes ☐	No ☒	Depth (inches): ____		
Water Table Present?	Yes ☐	No ☒	Depth (inches): ____		
Saturation Present? (includes capillary fringe)	Yes ☐	No ☒	Depth (inches): ____	**Wetland Hydrology Present?**	Yes ☐ No ☒

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

Remarks:

US Army Corps of Engineers — Western Mountains, Valleys, and Coast – Version 2.0

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

Project Site: Point Defiance Bypass Project — City/County: ____/Pierce — Sampling Date: 6/7/2011

Applicant/Owner: WSDOT Rail — State: WA — Sampling Point: AB-W1

Investigator(s): G. Gray — Section, Township, Range: DLC43-T18N-R1E

Landform (hillslope, terrace, etc.): swale bottom — Local relief (concave, convex, none): concave — Slope (%): 30

Subregion (LRR): A — Lat: 47.0667 — Long: -122.6942 — Datum: ____

Soil Map Unit Name: not mapped — NWI classification: none

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

Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

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

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

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

Remarks:

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: none)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Alnus rubra*	50	yes	FAC
2. ____	____	____	____
3. ____	____	____	____
4. ____	____	____	____
50% = 25, 20% = 10	50	= Total Cover	
Sapling/Shrub Stratum (Plot size: none)			
1. *Rubus spectabilis*	75	yes	FAC
2. ____	____	____	____
3. ____	____	____	____
4. ____	____	____	____
5. ____	____	____	____
50% = 37.5, 20% = 15	75	= Total Cover	
Herb Stratum (Plot size: none)			
1. *Pteridium aquilinum*	15	no	FACU
2. *Tolmiea menziesii*	30	yes	FAC
3. ____	____	____	____
4. ____	____	____	____
5. ____	____	____	____
6. ____	____	____	____
7. ____	____	____	____
8. ____	____	____	____
9. ____	____	____	____
10. ____	____	____	____
11. ____	____	____	____
50% = 22.5, 20% = 9	45	= Total Cover	
Woody Vine Stratum (Plot size: none)			
1. ____	____	____	____
2. ____	____	____	____
50% = ____, 20% = ____	____	= Total Cover	

% Bare Ground in Herb Stratum 0 *

Dominance Test Worksheet:

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

Prevalence Index worksheet:

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

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks:

US Army Corps of Engineers — Western Mountains, Valleys, and Coast – Version 2.0

Project Site: Point Defiance Bypass Project

SOIL

Sampling Point: AB-W1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 3/1	100	–	–	–	–	GSL *	* gravelly sandy loam with fine silts
12-18	2.5Y 4/2	90	2.5 5/3	10	C	M	GSL *	* gravelly sandy loam with fine silts

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: ____

Depth (inches): ____

Hydric Soils Present? Yes ☒ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes ☐	No ☒	Depth (inches):	____	
Water Table Present?	Yes ☒	No ☐	Depth (inches):	10	
Saturation Present? (includes capillary fringe)	Yes ☒	No ☐	Depth (inches):	0	**Wetland Hydrology Present?** Yes ☒ No ☐

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

Remarks:

US Army Corps of Engineers — Western Mountains, Valleys, and Coast – Version 2.0

Attachment E – Wetland Photos

Photo 1. Wetland A. North end, facing west from the Project footprint (2006).

Photo 2. Wetland A. North end, facing west from the Project footprint (2011).

Photo 3. Wetland East Murray Creek, facing west (2006).

Photo 4. Wetland East Murray Creek, facing north (2011).

Photo 5. Wetland C. Facing northwest along the BNSF rail (2011).

Photo 6. Wetland C. Culvert through which water flows out of wetland and under BNSF rail. Facing northwest (2011).

Wetland AB. Facing north (2006).

Wetland AB. Facing east and downward from the BNSF rail (2011).

Attachment F – Wetland Rating Forms

Wetland name or number A

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): A Date of site visit: 12/06

Rated by: P. Tosher Trained by Ecology? Yes ✓ No____ Date of training: 9/05

SEC: 15 TWNSHP: 19N RNGE: 2E Is S/T/R in Appendix D? Yes____ No ✓

Map of wetland unit: Figure_____ Estimated size_____

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland: I____ II____ III ✓ IV____

Category I =	Score > 70
Category II =	Score 51 - 69
Category III =	Score 30 – 50
Category IV =	Score < 30

Score for Water Quality Functions	18
Score for Hydrologic Functions	14
Score for Habitat Functions	9
TOTAL Score for Functions	41

Category based on SPECIAL CHARACTERISTCS of Wetland I____ II____ Does not apply ✓

Final Category (choose the "highest" category from above") III

Summary of basic information about the wetland unit.

Wetland Unit has Special Characteristics	
Estuarine	
Natural Heritage Wetland	
Bog	
Mature Forest	
Old Growth Forest	
Coastal Lagoon	
Interdunal	
None of the above	✓

Wetland HGM Class used for Rating	
Depressional	✓
Riverine	
Lake-fringe	
Slope	
Flats	
Freshwater Tidal	
Check if unit has multiple HGM classes present	

Does the wetland being rated meet any of the criteria below? If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands that Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered **animal or plant** species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		✓
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered **animal** species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category 1 Natural Heritage Wetlands (see p. 19 of data form).		✓
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		✓
SP4. *Does the wetland unit have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		✓

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands in to those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Wetland Rating Form – western Washington, version 2 (7/06) Page 1 of 12

Wetland name or number A

Classification of Vegetated Wetlands for Western Washington

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 (i.e. except during floods)?
   NO – go to 2 **YES** – the wetland class is **Tidal Fringe**
   If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?
   YES – Freshwater Tidal Fringe **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 a Saltwater Tidal Fringe it is rated as an **Estuarine** wetland.* Wetlands that were call estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p.).

2. The entire wetland unit is flat and precipitation is 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 meet both of the following criteria?
   _____ The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) where at least 20 acres (8ha) in size;
   _____ At least 30% of the open water area is deeper than 6.6 (2 m)?
   NO – go to 4 **YES** – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the entire wetland 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**?
   NOTE: *Surface water does not pond in these types of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 foot deep).*
   NO – go to 5 **YES** – The wetland class is **Slope**

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

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time of 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 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 your wetland. 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 class listed in column 2 is less than 10% of the unit, classify the wetland using the class that represents more than 90% of the total area.

HGM Classes within the wetland unit being rated	*HGM Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

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

Wetland name or number A

D	Depressional and Flat Wetlands	Points (only 1 score per box)
	WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.	
D 1	**Does the wetland have the potential to improve water quality?**	*(see p.38)*
	D 1.1 Characteristics of surface water flows out of the wetland: • Unit is a depression with no surface water leaving it (no outlet) ..... points = 3 • Unit has an intermittently flowing, OR highly constricted, permanently flowing outlet ..... points = 2 • Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) ..... points = 1 • Unit is a "flat" depression (Q.7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch ..... points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* **Provide photo or drawing**	Figure ___ 2
	D 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic (*use NRCS definitions*) **YES** points = 4 **NO** points = 0	0
	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class): • Wetland has persistent, ungrazed vegetation > = 95% of area ..... points = 5 • Wetland has persistent, ungrazed vegetation > = 1/2 of area ..... points = 3 • Wetland has persistent, ungrazed vegetation > = 1/10 of area ..... points = 1 • Wetland has persistent, ungrazed vegetation < 1/10 of area ..... points = 0 **Map of Cowardin vegetation classes**	Figure ___ 5
	D 1.4 Characteristics of seasonal ponding or inundation: *This is the area of the wetland that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 years.* • Area seasonally ponded is > 1/2 total area of wetland ..... points = 4 • Area seasonally ponded is > 1/4 total area of wetland ..... points = 2 • Area seasonally ponded is < 1/4 total area of wetland ..... points = 0 **Map of Hydroperiods**	Figure ___ 2
	Total for D 1 *Add the points in the boxes above*	7
D 2	**Does the wetland have the opportunity to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* ___ Grazing in the wetland or within 150 ft ___ Untreated stormwater discharges to wetland ___ Tilled fields or orchards within 150 ft. of wetland ✓ A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging ✓ Residential, urban areas, golf courses are within 150 ft. of wetland ___ Wetland is fed by groundwater high in phosphorus or nitrogen ___ Other ___ **YES** multiplier is 2 **NO** multiplier is 1	*(see p. 44)* Multiplier 2
◆	**TOTAL – Water Quality Functions** Multiply the score from D1 by D2; then ***add score to table on p. 1***	18
	HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation.	
D 3	**Does the wetland have the potential to reduce flooding and erosion?**	*(see p.46)*
	D 3.1 Characteristics of surface water flows out of the wetland unit • Unit is a depression with no surface water leaving it (no outlet) ..... points = 4 • Unit has an intermittently flowing, OR highly constricted permanently flowing outlet ..... points = 2 • Unit is a "flat" depression (Q.7 on key) or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch ..... points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* • Unit has an unconstricted, or slightly constricted, surface outlet *(permanently flowing)* ..... points = 0	2
	D 3.2 Depth of storage during wet periods. *Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry).* • Marks of ponding are 3 ft. or more above the surface or bottom of the outlet ..... points = 7 • The wetland is a "headwater" wetland ..... points = 5 • Marks of ponding between 2 ft. to < 3 ft. from surface or bottom of outlet ..... points = 5 • Marks are at least 0.5 ft. to < 2 ft. from surface or bottom of outlet ..... points = 3 • Wetland is flat (yes to Q.2 or Q.7 on key)but has small depressions on the surface that trap water points = 1 • Marks of ponding less than 0.5 ft ..... points = 0	0
	D 3.3 Contribution of wetland unit 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 unit ..... points = 5 • The area of the basin is 10 to 100 times the area of the unit ..... points = 3 • The area of the basin is more than 100 times the area of the unit ..... points = 0 • Entire unit is in the FLATS class ..... points = 5	5
	Total for D 3 *Add the points in the boxes above*	7
D 4	**Does the wetland have the opportunity to reduce flooding and erosion?** Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from	*(see p. 49)* Multiplier 2

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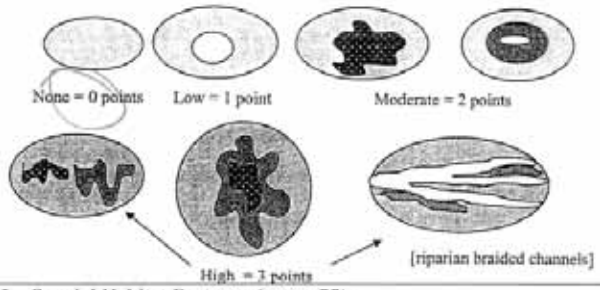
Wetland name or number _____

	groundwater in areas where damaging groundwater flooding does not occur. *Note which of the following indicators of opportunity apply.* ___ Wetland is in a headwater of a river or stream that has flooding problems. ___ Wetland drains to a river or stream that has flooding problems ___ Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems ✓ Other flat area that can store rainfall, constricted outlet **YES** multiplier is 2 **NO** multiplier is 1	
◆	**TOTAL – Hydrologic Functions** Multiply the score from D3 by D4; then ***add score to table on p. 1***	14

Comments:

Wetland name or number _____

These questions apply to wetlands of all HGM classes.		Points (only 1 score per box)
	HABITAT FUNCTIONS – Indicators that wetland functions to provide important habitat.	
H 1	**Does the wetland have the potential to provide habitat for many species?**	
	H 1.1 Vegetation structure *(see P. 72)*: *Check the types of vegetation classes present (as defined by Cowardin) – Size threshold for each class is 1/4 acre or more than 10% of the area if unit is smaller than 2.5 acres.* ___ Aquatic Bed ✓ Emergent plants ✓ Scrub/shrub (areas where shrubs have > 30% cover) ___ Forested (areas where trees have > 30% cover) *If the unit has a forested class check if:* ___ The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon. *Add the number of vegetation types that qualify. If you have:* **Map of Cowardin vegetation classes** 4 structures or more.....points = 4 — 3 structures..... points = 2 2 structures.....points = 1 — 1 structure ..... points = 0	**Figure ___** 0
	H 1.2 Hydroperiods *(see p. 73)*: *Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or 1/4 acre to count (see text for descriptions of hydroperiods).* ___ Permanently flooded or inundated — 4 or more types present points = 3 ✓ Seasonally flooded or inundated — 3 or more types present.....points = 2 ✓ Occasionally flooded or inundated — 2 types present.....points = 1 ✓ Saturated only — 1 type present ..... points = 0 ___ Permanently flowing stream or river in, or adjacent to, the wetland ___ Seasonally flowing stream in, or adjacent to, the wetland ___ **Lake-fringe wetland.....= 2 points** ___ **Freshwater tidal wetland.....= 2 points** **Map of hydroperiods**	**Figure ___** 2
	H 1.3 Richness of Plant Species *(see p. 75)*: Count the number of plant species in the wetland that cover at least 10 ft^2 *(different patches of the same species can be combined to meet the size threshold)* *You do not have to name the species. Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle.* If you counted: > 19 species ..... points = 2 ✓ 5 – 19 species ..... points = 1 < 5 species ..... points = 0 List species below if you want to: _____ _____ _____ _____	1
	H 1.4 Interspersion of Habitats *(see p. 76)*: Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.  Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always "high". **Use map of Cowardin classes.**	**Figure ___** 0
	H 1.5 Special Habitat Features *(see p. 77)*: *Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.* ✓ Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft. long) ___ Standing snags (diameter at the bottom > 4 inches) in the wetland ___ Undercut banks are present for at least 6.6 ft. (2m) and/or overhanging vegetation extends at least 3.3 ft. (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft. (10m) ___ 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 turned grey/brown)* ___ At least 1/4 acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)* ___ Invasive plants cover less than 25% of the wetland area in each stratum of plants *NOTE: The 20% stated in early printings of the manual on page 78 is an error.*	1
	H 1 TOTAL Score – potential for providing habitat *Add the points in the column above*	4

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Wetland name or number A

H 2	Does the wetland have the opportunity to provide habitat for many species?	(only 1 score per box)
	H 2.1 Buffers *(see P. 80)*: *Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed".* ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% of circumference. No structures are within the undisturbed part of buffer (relatively undisturbed also means no grazing, no landscaping, no daily human use).. .....**points = 5** ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference.....**points = 4** ____ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference.....**points = 4** ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference.....**points = 3** ____ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference .....**points = 3** **If buffer does not meet any of the criteria above:** ____ No paved areas (except paved trails) or buildings within 25m (80 ft) of wetland > 95% circumference. Light to moderate grazing or lawns are OK .....**points = 2** ____ No paved areas of buildings within 50m of wetland for > 50% circumference. Light to moderate grazing or lawns are OK.....**points = 2** ____ Heavy grazing in buffer .....**points = 1** ____ Vegetated buffers are < 2m wide (6.6 ft) for more than 95% circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland).....**points = 0** ____ Buffer does not meet any of the criteria above .....**points = 1** **Arial photo showing buffers**	Figure ___ 1
	H 2.2 Corridors and Connections *(see p. 81)* H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft. wide, has at least a 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? *(Dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor).* **YES = 4 points** (go to H 2.3) **NO** = go to H 2.2.2 H. 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50 ft. wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR a Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above? **YES = 2 points** (go to H 2.3) **NO** = go to H 2.2.3 H. 2.2.3 Is the wetland: • Within 5 mi (8km) of a brackish or salt water estuary OR • Within 3 miles of a large field or pasture (> 40 acres) OR **YES** = 1 point • Within 1 mile of a lake greater than 20 acres? **NO** = 0 points	1

Comments:

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Wetland name or number A

H 2.3 Near or adjacent to other priority habitats listed by WDFW (see p. 82):
Which of the following priority habitats are within 330 ft. (100m) of the wetland? *NOTE: the connections do not have to be relatively undisturbed. These are DFW definitions. Check with your local DFW biologist if there are any questions.*

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

____ **Aspen Stands:** Pure or mixed stands of aspen greater than 0.8 ha (2 acres)

____ **Cliffs**: Greater than 7.6m (25 ft) high and occurring below 5000 ft.

____ **Old-growth forests**: (Old growth west of Cascade Crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings, with at least 20 trees/ha (8 trees/acre) > 81cm (32 in) dbh or > 200 years of age.

____ **Mature forests**: Stands with average diameters exceeding 53cm (21 in) 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.

____ **Prairies**: Relatively undisturbed areas (as indicated by dominance of native plants) where greases and/or forbs form the natural climax plant community.

____ **Talus**: Homogenous areas of rock rubble ranging in average size 0.15 – 2.0m (0.5 – 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.

____ **Caves**: A naturally occurring cavity, recess, void, or system of interconnected passages.

____ **Oregon white Oak**: Woodlands stands of pure oak or oak/conifer associations where canopy coverage of the oak component of the stand is 25%.

____ **Urban Natural Open Space**: A priority species resides within or is adjacent to the open space and uses it for breeding and/or regular feeding; and/or the open space functions as a corridor connecting other *priority habitats*, especially those that would otherwise be isolated; and/or the open space is an isolated remnant of natural habitat larger than 4 ha (10 acres) and is surrounded by urban development.

____ **Estuary/Estuary-like**: Deepwater tidal habitats and adjacent tidal wetlands, usually semi-enclosed by land but with open, partly obstructed or sporadic access to the open ocean, and in which ocean water is at least occasionally diluted by freshwater runoff from the land. The salinity may be periodically increased above that of the open ocean by evaporation. Along some low-energy coastlines there is appreciable dilution of sea water. Estuarine habitat extends upstream and landward to where ocean-derived salts measure less than 0.5 ppt. during the period of average annual low flow. Includes both estuaries and lagoons.

____ **Marine/Estuarine Shorelines**: Shorelines include the intertidal and subtidal zones of beaches, and may also include the backshore and adjacent components of the terrestrial landscape (e.g., cliffs, snags, mature trees, dunes, meadows) that are important to shoreline associated fish and wildlife and that contribute to shoreline function (e.g., sand/rock/log recruitment, nutrient contribution, erosion control).

If wetland has 3 or more priority habitats .= 4 points If wetland has 1 priority habit ...= 1 point
If wetland has 2 priority habitats .....= 3 points No habitats.....= 0 points
Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. (Nearby wetlands are addressed in question H 2.4).

0

H 2.4 Wetland Landscape: *Choose the **one** description of the landscape around the wetland that best fits (see p. 84)*

- There are at least 3 other wetlands within 1/2 mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development.....points = 5
- The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within 1/2 mile .....points = 5
- There are at least 3 other wetlands within 1/2 mile, BUT the connections between them are disturbed. .....points = 3
- The wetland fringe on a lake **with** disturbance and there are 3 other lake-fringe wetlands within 1/2 mile.....points = 3
- There is at least 1 wetland within 1/2 mile.....points = 2
- There are no wetlands within 1/2 mile .....points = 0

3

	H 2 TOTAL Score – opportunity for providing habitat *Add the scores from H2.1, H2.2, H2.3, H2.4*	3
	TOTAL for H 1 from page 8	4
◆	**Total Score for Habitat Functions** Add the points for H 1 and H 2; then ***record the result on p. 1***	9

Comments:

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Wetland name or number A

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

	Wetland Type – *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*	
SC1	**Estuarine wetlands?** *(see p.86)* Does the wetland unit 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** ✓	
	SC 1.1 Is the wetland unit 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. 1
	SC 1.2 Is the wetland at least 1 acre in size and meets at least two of the following conditions? **YES** = Category I **NO** = Category II ___ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp,. are only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category 1. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. ___ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland ___ The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	Cat. I Cat. II Dual Rating I/II
SC2	**Natural Heritage Wetlands** *(see p. 87)* Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland being rated in a Section/Township/Range that contains a natural heritage wetland? *(This question is used to screen out most sites before you need to contact WNHP/DNR.)* S/T/R information from Appendix D ✓ or accessed from WNHP/DNR web site ✓ **YES** ___ Contact WNHP/DNR (see p. 79) and go to SC 2.2 **NO** ✓ SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as a site with state threatened or endangered plant species? **YES** = Category 1 **NO** ✓ not a Heritage Wetland	Cat 1
SC3	**Bogs** *(see p. 87)* Does the wetland **(or any part of the unit)** meet both the criteria for soils and vegetation in bogs? Use the key below to identify if the wetland is a bog. ***If you answer yes you will still need to rate the wetland based on its function.*** 1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of soil profile? (See Appendix B for a field key to identify organic soils)? **YES** = go to question 3 **NO** = go to question 2 2. Does the wetland have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? **YES** = go to question 3 **NO** = is not a bog for purpose of rating 3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? **YES** = Is a bog for purpose of rating **NO** = go to question 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" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog. 4. Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine. WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cover)*? **YES** = Category I **NO** = Is not a bog for purpose of rating	Cat. I

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Wetland name or number _____

SC4	**Forested Wetlands** *(see p. 90)* Does the wetland have at least 1 acre of forest that meet one of these criteria for the 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 function.* ____ **Old-growth forests**: (west of Cascade Crest) Stands of at least two three species forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm or more). NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter. ____ **Mature forests**: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have an average diameters (dbh) exceeding 21 inches (53 cm); 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. **YES** = Category I **NO** = ✓ not a forested wetland with special characteristics	Cat. I
SC5	**Wetlands in Coastal Lagoons** *(see p. 91)* 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 surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom.)* **YES** = Go to SC 5.1 **NO** ✓ not a wetland in a coastal lagoon SC 5.1 Does the wetland meet all of the following three conditions? ____ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing) and has less than 20% cover of invasive plant species (see list of invasive species on p. 74). ____ At least 3/4 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 acre (4350 square ft.) **YES** = Category I **NO** = Category II	Cat. I Cat. II
SC6	**Interdunal Wetlands** *(see p. 93)* Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? **YES** = Go to SC 6.1 **NO** ✓ not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its functions.*** In practical terms that means the following geographic areas: • Long Beach Peninsula -- lands west of SR 103 • Grayland-Westport -- lands west of SR 105 • Ocean Shores-Copalis – lands west of SR 115 and SR 109 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is one acre or larger? **YES** = Category II **NO** = go to SC 6.2 SC 6.2 Is the wetland between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? **YES** = Category III	Cat. II Cat. III
◆	**Category of wetland based on Special Characteristics** *Choose the "highest" rating if wetland falls into several categories, and record on p. 1.* If you answered **NO** for all types enter "Not Applicable" on p. 1	N/A

Comments:

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Wetland name or number E

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): E Date of site visit: 12/22/06

Rated by: P. Toglia Trained by Ecology? Yes ✓ No ____ Date of training: 5/2005

SEC: 30 TWNSHP: 19N RNGE: 2E Is S/T/R in Appendix D? Yes ✓ No ____

federal reservation

Map of wetland unit: Figure ____ Estimated size 0.1

T/S/R not consistent in threatened

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland: I ____ II ____ III ✓ IV ____

Category I =	Score > 70	Score for Water Quality Functions	20
Category II =	Score 51 - 69	Score for Hydrologic Functions	22
Category III =	Score 30 – 50	Score for Habitat Functions	6
Category IV =	Score < 30	TOTAL Score for Functions	48

Category based on SPECIAL CHARACTERISTCS of Wetland I ____ II ____ Does not apply ____

Final Category (choose the "highest" category from above") ☐

Summary of basic information about the wetland unit.

Wetland Unit has Special Characteristics		Wetland HGM Class used for Rating	
Estuarine		Depressional	
Natural Heritage Wetland		Riverine	✓
Bog		Lake-fringe	
Mature Forest		Slope	
Old Growth Forest		Flats	
Coastal Lagoon		Freshwater Tidal	
Interdunal			
None of the above	✓	Check if unit has multiple HGM classes present	☐

Does the wetland being rated meet any of the criteria below? If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands that Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered **animal or plant** species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered **animal** species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category 1 Natural Heritage Wetlands (see p. 19 of data form).		
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		
SP4. *Does the wetland unit have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands in to those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

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Wetland name or number E

Classification of Vegetated Wetlands for Western Washington

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 (i.e. except during floods)?
   NO – go to 2 **YES** – the wetland class is **Tidal Fringe**
   If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?
   YES – Freshwater Tidal Fringe **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 a Saltwater Tidal Fringe it is rated as an **Estuarine** wetland.* Wetlands that were call estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p.).

2. The entire wetland unit is flat and precipitation is 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 meet both of the following criteria?
   _____ The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) where at least 20 acres (8ha) in size;
   _____ At least 30% of the open water area is deeper than 6.6 (2 m)?
   NO – go to 4 **YES** – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the entire wetland 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**?
   NOTE: *Surface water does not pond in these types of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 foot deep).*
   NO – go to 5 **YES** – The wetland class is **Slope**

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

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time of 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 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 your wetland. 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 class listed in column 2 is less than 10% of the unit, classify the wetland using the class that represents more than 90% of the total area.

HGM Classes within the wetland unit being rated	*HGM Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

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

Wetland name or number E

R	Riverine and Freshwater Tidal Fringe Wetlands	Points (only 1 box per box)
	WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality	
R 1	**Does the wetland have the potential to improve water quality?** *(see p.52)*	
	R 1.1 Area of surface depressions within the riverine wetland that can trap sediments during a flooding event: • Depressions cover > 3/4 area of wetland ..... points = 8 • Depressions cover > 1/2 area of wetland ..... points = 4 **(If depressions > 1/2 of area of unit draw polygons on aerial photo or map)** • Depressions present but cover < 1/2 area of wetland ..... points = 2 • No depressions present ..... points = 0	**Figure** ___ 4
	R 1.2 Characteristics of the vegetation in the unit (areas with >90% cover at person height): • Trees or shrubs > 2/3 area of the unit ..... points = 8 • Trees or shrubs > 1/3 area of the wetland ..... points = 6 • Ungrazed, herbaceous plants > 2/3 area of unit ..... points = 6 • Ungrazed herbaceous plants > 1/3 area of unit ..... points = 3 • Trees, shrubs, and ungrazed herbaceous < 1/3 area of unit ..... points = 0 **Aerial photo or map showing polygons of different vegetation types**	**Figure** ___ 6
	Add the points in the boxes above	10
R 2	**Does the wetland have the opportunity to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland. *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* ___ Grazing in the wetland or within 150 ft ___ Untreated stormwater discharges to wetland ✓ Tilled fields or orchards within 150 ft. of wetland ___ A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging ___ Residential, urban areas, golf courses are within 150 ft. of wetland ___ The river or stream linked to the wetland has a contributing basin where human activities have raised levels of sediment, toxic compounds or nutrients in the river water above standards for water quality. ___ Other _____ **YES** multiplier is 2 **NO** multiplier is 1	*(see p. 53)* Multiplier 2
◆	**TOTAL – Water Quality Functions** Multiply the score from R1 by R2; then ***add score to table on p. 1***	20
	HYDROLOGIC FUNCTIONS – Indicators that wetland functions to reduce flooding and stream erosion	
R 3	**Does the wetland have the potential to reduce flooding and erosion?**	*(see p.54)*
	R 3.1 Characteristics of the overbank storage the wetland provides: *Estimate the average width of the wetland perpendicular to the direction of the flow and the width of the stream or river channel (distance between banks). Calculate the ratio: (average width of unit) / (average width of stream between banks).* • If the ratio is more than 20 ..... points = 9 • If the ratio is between 10 – 20 ..... points = 6 • If the ratio is 5- <10 ..... points = 4 • If the ratio is 1- <5 ..... points = 2 • If the ratio is < 1 ..... points = 1 **Aerial photo or map showing average widths**	**Figure** ___ 4
	R 3.2 Characteristics of vegetation that slow down water velocities during floods: *Treat large woody debris as "forest or shrub". Choose the points appropriate for the best description. (polygons need to have >90% cover at person height NOT Cowardin classes):* • Forest or shrub for > 1/3 area OR herbaceous plants > 2/3 area ..... points = 7 • Forest or shrub for > 1/10 area OR herbaceous plants > 1/3 area ..... points = 4 • Vegetation does not meet above criteria ..... points = 0 **Aerial photo or map showing polygons of different vegetation types**	**Figure** ___ 7
	Add the points in the boxes above	11
R 4	**Does the wetland have the opportunity to reduce flooding and erosion?** Answer YES if the wetland is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. *Note which of the following conditions apply.* ✓ There are human structures and activities downstream (roads, buildings, bridges, farms) that can be damaged by flooding. ___ There are natural resources downstream (e.g. salmon redds) that can be damaged by flooding ___ Other _____ *(Answer NO if the major source of water to the wetland is controlled by a reservoir or the wetland is tidal fringe along the sides of a dike)* **YES** multiplier is 2 **NO** multiplier is 1	*(see p.57)* Multiplier 2
◆	**TOTAL – Hydrologic Functions** Multiply the score from R3 by R4; then ***add score to table on p. 1***	22

Comments:

Wetland name or number E

These questions apply to wetlands of all HGM classes. — Points (only 1 score per box)

HABITAT FUNCTIONS – indicators that wetland functions to provide important habitat

H 1 Does the wetland have the potential to provide habitat for many species?

H 1.1 Vegetation structure *(see P. 72)*: — **Figure ___**

Check the types of vegetation classes present (as defined by Cowardin) – Size threshold for each class is 1/4 acre or more than 10% of the area if unit is smaller than 2.5 acres.

- ✓ Aquatic Bed
- ___ Emergent plants
- ___ Scrub/shrub (areas where shrubs have > 30% cover)
- ___ Forested (areas where trees have > 30% cover)

If the unit has a forested class check if:

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

Add the number of vegetation types that qualify. If you have:

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

Map of Cowardin vegetation classes — 0

H 1.2 Hydroperiods *(see p.73)*: — **Figure ___**

Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or 1/4 acre to count (see text for descriptions of hydroperiods).

- ___ Permanently flooded or inundated
- ✓ Seasonally flooded or inundated
- ___ Occasionally flooded or inundated
- ___ Saturated only
- ___ Permanently flowing stream or river in, or adjacent to, the wetland
- ___ Seasonally flowing stream in, or adjacent to, the wetland
- ___ **Lake-fringe wetland.....= 2 points**
- ___ **Freshwater tidal wetland.....= 2 points**

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

Map of hydroperiods — 1

H 1.3 Richness of Plant Species *(see p. 75)*:

Count the number of plant species in the wetland that cover at least 10 ft^2 *(different patches of the same species can be combined to meet the size threshold)*

You do not have to name the species. Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle.

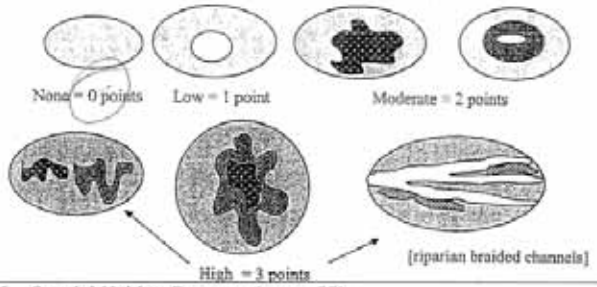
If you counted:
> 19 species ..... points = 2
5 – 19 species ..... points = 1
< 5 species ..... points = 0

List species below if you want to:

Phar, Tyla — 0

H 1.4 Interspersion of Habitats *(see p. 76)*:

Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.



Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always "high".

Use map of Cowardin classes. — **Figure ___** — 0

H 1.5 Special Habitat Features *(see p. 77)*:

Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.

- ___ Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft. long)
- ___ Standing snags (diameter at the bottom > 4 inches) in the wetland
- ___ Undercut banks are present for at least 6.6 ft. (2m) and/or overhanging vegetation extends at least 3.3 ft. (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft. (10m)
- ___ 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 turned grey/brown)*
- ___ At least 1/4 acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)*
- ___ Invasive plants cover less than 25% of the wetland area in each stratum of plants

NOTE: The 20% stated in early printings of the manual on page 78 is an error.

Ø

H 1 TOTAL Score – potential for providing habitat — *Add the points in the column above* — 1

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Wetland name or number B

H 2	Does the wetland have the opportunity to provide habitat for many species?	(only 1 score per box)
	H 2.1 Buffers *(see P. 80)*: *Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed".* ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% of circumference. No structures are within the undisturbed part of buffer (relatively undisturbed also means no grazing, no landscaping, no daily human use).....points = 5 ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference.....points = 4 ___ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference.....points = 4 ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference.....points = 3 ___ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference.....points = 3 **If buffer does not meet any of the criteria above:** ___ No paved areas (except paved trails) or buildings within 25m (80 ft) of wetland > 95% circumference. Light to moderate grazing or lawns are OK.....points = 2 ___ No paved areas of buildings within 50m of wetland for > 50% circumference. Light to moderate grazing or lawns are OK.....points = 2 ___ Heavy grazing in buffer.....points = 1 ___ Vegetated buffers are < 2m wide (6.6 ft) for more than 95% circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland).....points = 0 ✓ Buffer does not meet any of the criteria above.....points = 1 **Arial photo showing buffers**	Figure ___ 1
	H 2.2 Corridors and Connections *(see p. 81)* H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft. wide, has at least a 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? *(Dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor).* **YES = 4 points** (go to H 2.3) **NO** = go to H 2.2.2 H. 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50 ft. wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR a Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above? **YES = 2 points** (go to H 2.3) **NO** = go to H 2.2.3 H. 2.2.3 Is the wetland: • Within 5 mi (8km) of a brackish or salt water estuary OR • Within 3 miles of a large field or pasture (> 40 acres) OR • Within 1 mile of a lake greater than 20 acres? **YES** = 1 point **NO** = 0 points	1

Comments:

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Wetland name or number E

	H 2.3 Near or adjacent to other priority habitats listed by WDFW (see p. 82): Which of the following priority habitats are within 330 ft. (100m) of the wetland? *NOTE: the connections do not have to be relatively undisturbed. These are DFW definitions. Check with your local DFW biologist if there are any questions.* ___ **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other. ___ **Aspen Stands**: Pure or mixed stands of aspen greater than 0.8 ha (2 acres) ___ **Cliffs**: Greater than 7.6m (25 ft) high and occurring below 5000 ft. ___ **Old-growth forests**: (Old growth west of Cascade Crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings, with at least 20 trees/ha (8 trees/acre) > 81cm (32 in) dbh or > 200 years of age. ___ **Mature forests**: Stands with average diameters exceeding 53cm (21 in) 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. ___ **Prairies**: Relatively undisturbed areas (as indicated by dominance of native plants) where greases and/or forbs form the natural climax plant community. ___ **Talus**: Homogenous areas of rock rubble ranging in average size 0.15 – 2.0m (0.5 – 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs. ___ **Caves**: A naturally occurring cavity, recess, void, or system of interconnected passages. ✓ **Oregon white Oak**: Woodlands stands of pure oak or oak/conifer associations where canopy coverage of the oak component of the stand is 25%. ___ **Urban Natural Open Space**: A priority species resides within or is adjacent to the open space and uses it for breeding and/or regular feeding; and/or the open space functions as a corridor connecting other *priority habitats*, especially those that would otherwise be isolated; and/or the open space is an isolated remnant of natural habitat larger than 4 ha (10 acres) and is surrounded by urban development. ___ **Estuary/Estuary-like**: Deepwater tidal habitats and adjacent tidal wetlands, usually semi-enclosed by land but with open, partly obstructed or sporadic access to the open ocean, and in which ocean water is at least occasionally diluted by freshwater runoff from the land. The salinity may be periodically increased above that of the open ocean by evaporation. Along some low-energy coastlines there is appreciable dilution of sea water. Estuarine habitat extends upstream and landward to where ocean-derived salts measure less than 0.5 ppt. during the period of average annual low flow. Includes both estuaries and lagoons. ___ **Marine/Estuarine Shorelines**: Shorelines include the intertidal and subtidal zones of beaches, and may also include the backshore and adjacent components of the terrestrial landscape (e.g., cliffs, snags, mature trees, dunes, meadows) that are important to shoreline associated fish and wildlife and that contribute to shoreline function (e.g., sand/rock/log recruitment, nutrient contribution, erosion control). If wetland has 3 or more priority habitats .= 4 points If wetland has 1 priority habit ...= 1 point If wetland has 2 priority habitats .....= 3 points No habitats.....= 0 points Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. (Nearby wetlands are addressed in question H 2.4).	1
	H 2.4 Wetland Landscape: *Choose the **one** description of the landscape around the wetland that best fits (see p. 84)* • There are at least 3 other wetlands within 1/2 mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development.....points = 5 • The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within 1/2 mile .....points = 5 • There are at least 3 other wetlands within 1/2 mile, BUT the connections between them are disturbed. .....points = 3 • The wetland fringe on a lake **with** disturbance and there are 3 other lake-fringe wetlands within 1/2 mile.....points = 3 • There is at least 1 wetland within 1/2 mile.....points = 2 • There are no wetlands within 1/2 mile .....points = 0	2
	H 2 TOTAL Score – opportunity for providing habitat *Add the scores from H2.1, H2.2, H2.3, H2.4*	3
	TOTAL for H 1 from page 8	1
◆	**Total Score for Habitat Functions** Add the points for H 1 and H 2; then ***record the result on p. 1***	6

Comments:

Wetland name or number _____

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

	Wetland Type – *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*	
SC1	**Estuarine wetlands?** *(see p.86)* Does the wetland unit 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** ___	
	SC 1.1 Is the wetland unit 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. 1
	SC 1.2 Is the wetland at least 1 acre in size and meets at least two of the following conditions? **YES** = Category I **NO** = Category II ___ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp,. are only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category I. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. ___ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland ___ The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	Cat. I Cat. II Dual Rating I/II
SC2	**Natural Heritage Wetlands** *(see p. 87)* Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland being rated in a Section/Township/Range that contains a natural heritage wetland? *(This question is used to screen out most sites before you need to contact WNHP/DNR.)* S/T/R information from Appendix D ___✓___ or accessed from WNHP/DNR web site _____ **YES** ___✓___ Contact WNHP/DNR (see p. 79) and go to SC 2.2 **NO** _____ SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as a site with state threatened or endangered plant species? **YES** = Category I **NO** _____ not a Heritage Wetland	Cat I
SC3	**Bogs** *(see p. 87)* Does the wetland **(or any part of the unit)** meet both the criteria for soils and vegetation in bogs? Use the key below to identify if the wetland is a bog. ***If you answer yes you will still need to rate the wetland based on its function.*** 1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of soil profile? (See Appendix B for a field key to identify organic soils)? **YES** = go to question 3 **NO** = go to question 2 2. Does the wetland have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? **YES** = go to question 3 **NO** = is not a bog for purpose of rating 3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? **YES** = Is a bog for purpose of rating **NO** = go to question 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" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog. 4. Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine. WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cover)*? **YES** = Category I **NO** = Is not a bog for purpose of rating	Cat. I

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Wetland name or number _____

SC4	**Forested Wetlands** *(see p. 90)* Does the wetland have at least 1 acre of forest that meet one of these criteria for the 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 function.* ____ **Old-growth forests:** (west of Cascade Crest) Stands of at least two three species forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm or more). NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter. ____ **Mature forests:** (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have an average diameters (dbh) exceeding 21 inches (53 cm); 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. **YES** = Category I **NO** = 1 not a forested wetland with special characteristics	Cat. I
SC5	**Wetlands in Coastal Lagoons** *(see p. 91)* 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 surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom.)* **YES** = Go to SC 5.1 **NO** 1 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 invasive plant species (see list of invasive species on p. 74). ____ At least 3/4 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 acre (4350 square ft.) **YES** = Category I **NO** = Category II	Cat. I Cat. II
SC6	**Interdunal Wetlands** *(see p. 93)* Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? **YES** = Go to SC 6.1 **NO** 1 not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its functions.*** In practical terms that means the following geographic areas: • Long Beach Peninsula -- lands west of SR 103 • Grayland-Westport -- lands west of SR 105 • Ocean Shores-Copalis – lands west of SR 115 and SR 109 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is one acre or larger? **YES** = Category II **NO** = go to SC 6.2 SC 6.2 Is the wetland between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? **YES** = Category III	Cat. II Cat. III
◆	**Category of wetland based on Special Characteristics** *Choose the "highest" rating if wetland falls into several categories, and record on p. 1.* If you answered **NO** for all types enter "Not Applicable" on p. 1	

Comments:

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Wetland name or number C

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): C Date of site visit: 12/12/06

Rated by: P. Tosher Trained by Ecology? Yes ✓ No ___ Date of training: 2005

SEC: 3 TWNSHP: 18N RNGE: 1E Is S/T/R in Appendix D? Yes ___ No ✓

Map of wetland unit: Figure ___ **Estimated size** 5 1 ac.

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland: I ___ **II** ___ **III** ___ **IV** ✓

Category I =	Score > 70	Score for Water Quality Functions	5
Category II =	Score 51 - 69	Score for Hydrologic Functions	6
Category III =	Score 30 – 50	Score for Habitat Functions	12
✓ Category IV =	Score < 30	TOTAL Score for Functions	23

Category based on SPECIAL CHARACTERISTCS of Wetland I ___ **II** ___ **Does not apply** ✓

Final Category (choose the "highest" category from above") IV

Summary of basic information about the wetland unit.

Wetland Unit has Special Characteristics		Wetland HGM Class used for Rating	
Estuarine		Depressional	
Natural Heritage Wetland		Riverine	
Bog		Lake-fringe	
Mature Forest		Slope	✓
Old Growth Forest		Flats	
Coastal Lagoon		Freshwater Tidal	
Interdunal			
None of the above	✓	Check if unit has multiple HGM classes present	

Does the wetland being rated meet any of the criteria below? If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands that Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered **animal or plant** species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		✓
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered **animal** species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category 1 Natural Heritage Wetlands (see p. 19 of data form).		✓
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		✓
SP4. *Does the wetland unit have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		✓

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands in to those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

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Wetland name or number C

Classification of Vegetated Wetlands for Western Washington

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 (i.e. except during floods)?
   NO – go to 2 YES – the wetland class is **Tidal Fringe**
   If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?
   YES – Freshwater Tidal Fringe **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 a Saltwater Tidal Fringe it is rated as an **Estuarine** wetland.* Wetlands that were call estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p.).

2. The entire wetland unit is flat and precipitation is 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 meet both of the following criteria?
   ✓ The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) where at least 20 acres (8ha) in size;
   ✓ At least 30% of the open water area is deeper than 6.6 (2 m)?
   NO – go to 4 YES – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the entire wetland 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**?
   NOTE: *Surface water does not pond in these types of wetlands except **occasionally** in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 foot deep).*
   NO – go to 5 YES – The wetland class is **Slope**

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

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time of 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 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 your wetland. 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 class listed in column 2 is less than 10% of the unit, classify the wetland using the class that represents more than 90% of the total area.

HGM Classes within the wetland unit being rated	*HGM Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

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

Wetland name or number C

S	Slope Wetlands	Points (only 1 score per box) (see p.64)
	WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.	
S 1	**Does the wetland have the potential to improve water quality?**	
	S 1.1 Characteristics of average slope of unit: • Slope is 1% or less *(a 1% slope has a 1 ft. vertical drop in elevation for every 100 ft. horizontal distance)*..... 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 inches below the surface (or duff layer) is clay, organic *(Use NRCS definitions)*. **YES** = 3 points **NO** = 0 points	3
	S 1.3 Characteristics of the vegetation in the wetland that trap sediments and pollutants: *Choose the points appropriate for the description that best fits the vegetation in the wetland. Dense vegetation means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 inches.* • Dense, uncut, herbaceous vegetation > 90% of the wetland area..... points = 6 • Dense, uncut, herbaceous vegetation > 1/2 of area..... points = 3 • Dense, woody, vegetation > 1/2 of area..... points = 2 • Dense, uncut, herbaceous vegetation > 1/4 of area..... points = 1 • Does not meet any of the criteria above for vegetation..... points = 0 **Aerial photo or map with vegetation polygons**	**Figure** ___ 2
	Total for S 1 *Add the points in the boxes above*	5
S 2	**Does the wetland have the opportunity to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* ___ Grazing in the wetland or within 150 ft ___ Untreated stormwater discharges to wetland ___ Tilled fields, logging, or orchards within 150 ft. of wetland ___ Residential, urban areas, or golf courses are within 150 ft. upslope of wetland ___ Other _____ **YES** multiplier is 2 **NO** multiplier is 1	*(see p. 67)* Multiplier 1
◆	TOTAL – Water **Quality Functions** Multiply the score from S1 by S2; then *add score to table on p. 1*	5
	HYDROLOGIC FUNCTIONS – Indicators that wetland functions to reduce flooding and stream erosion.	
S 3	**Does the wetland have the potential to reduce flooding and stream erosion?**	*(see p.68)*
	S 3.1 Characteristics of vegetation 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 > 1/8in), or dense enough to remain erect during surface flows).* • Dense, uncut, **rigid** vegetation covers > 90% of the area of the wetland..... points = 6 • Dense, uncut, **rigid** vegetation> 1/2 area of wetland..... points = 3 • Dense, uncut, **rigid** vegetation > 1/4 area..... points = 1 • More than 1/4 of area is grazed, mowed, tilled, or vegetation is not rigid..... points = 0	6
	S 3.2 Characteristics of slope wetland that holds back small amounts of flood flows. The slope has small surface depressions that can retain water over at least 10% of its area. **YES** = 2 points **NO** = 0 points	0
	Add the points in the boxes above	6
S 4	**Does the wetland have the opportunity to reduce flooding and erosion?** Is the wetland in a landscape position where the reduction in water velocity it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows? *Note which of the following conditions apply.* ___ Wetland has surface runoff that drains to a river or stream that has flooding problems ___ Other _____ *(Answer NO if the major source of water is controlled by a reservoir (e.g. wetland is a seep that is on the downstream side of a dam)* **YES** multiplier is 2 **NO** multiplier is 1	*(see p. 70)* Multiplier 1
◆	**TOTAL – Hydrologic Functions** Multiply the score from S3 by S4; then ***add score to table on p. 1***	6

Comments:

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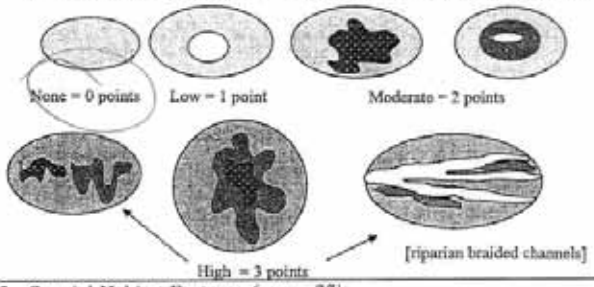
Wetland name or number ✓

These questions apply to wetlands of all HGM classes. HABITAT FUNCTIONS – Indicators that wetland functions to provide important habitat	Points (only 1 score per box)
H 1 Does the wetland have the potential to provide habitat for many species?	
H 1.1 Vegetation structure *(see P. 72)*: *Check the types of vegetation classes present (as defined by Cowardin) – Size threshold for each class is 1/4 acre or more than 10% of the area if unit is smaller than 2.5 acres.* ___ Aquatic Bed ___ Emergent plants ___ Scrub/shrub (areas where shrubs have > 30% cover) ✓ Forested (areas where trees have > 30% cover) *If the unit has a forested class check if:* ___ The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon. *Add the number of vegetation types that qualify. If you have:* **Map of Cowardin vegetation classes** 4 structures or more..... points = 4 — 3 structures..... points = 2 2 structures..... points = 1 — 1 structure ..... points = 0	**Figure ___** Ø
H 1.2 Hydroperiods *(see p.73)*: *Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or 1/4 acre to count (see text for descriptions of hydroperiods).* ___ Permanently flooded or inundated — 4 or more types present points = 3 ___ Seasonally flooded or inundated — 3 or more types present.....points = 2 ___ Occasionally flooded or inundated — 2 types present.....points = 1 ✓ Saturated only — 1 type present .....points = 0 ___ Permanently flowing stream or river in, or adjacent to, the wetland ___ Seasonally flowing stream in, or adjacent to, the wetland ___ **Lake-fringe wetland..... = 2 points** ___ **Freshwater tidal wetland..... = 2 points** **Map of hydroperiods**	**Figure ___** 0
H 1.3 Richness of Plant Species *(see p. 75)*: Count the number of plant species in the wetland that cover at least 10 ft^2 *(different patches of the same species can be combined to meet the size threshold)* *You do not have to name the species. Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle.* If you counted: > 19 species ..... points = 2 5 – 19 species..... points = 1 < 5 species ..... points = 0 List species below if you want to:	1
H 1.4 Interspersion of Habitats *(see p. 76)*: Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.  Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always "high". **Use map of Cowardin classes.**	**Figure ___** 0
H 1.5 Special Habitat Features *(see p. 77)*: *Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.* ___ Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft. long) ✓ Standing snags (diameter at the bottom > 4 inches) in the wetland ___ Undercut banks are present for at least 6.6 ft. (2m) and/or overhanging vegetation extends at least 3.3 ft. (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft. (10m) ___ 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 turned grey/brown)* ___ At least 1/4 acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)* ___ Invasive plants cover less than 25% of the wetland area in each stratum of plants *NOTE: The 20% stated in early printings of the manual on page 78 is an error.*	1
H 1 TOTAL Score – potential for providing habitat *Add the points in the column above*	2

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Wetland name or number C

H 2	Does the wetland have the opportunity to provide habitat for many species?	(only 1 score per box)
	H 2.1 Buffers *(see P. 80)*: *Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed".* ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% of circumference. No structures are within the undisturbed part of buffer (relatively undisturbed also means no grazing, no landscaping, no daily human use).....points = 5 ✓ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference.....points = 4 ____ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference.....points = 4 ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference.....points = 3 ____ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference .....points = 3 **If buffer does not meet any of the criteria above:** ____ No paved areas (except paved trails) or buildings within 25m (80 ft) of wetland > 95% circumference. Light to moderate grazing or lawns are OK.....points = 2 ____ No paved areas of buildings within 50m of wetland for > 50% circumference. Light to moderate grazing or lawns are OK.....points = 2 ____ Heavy grazing in buffer .....points = 1 ____ Vegetated buffers are < 2m wide (6.6 ft) for more than 95% circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland).....points = 0 ____ Buffer does not meet any of the criteria above .....points = 1 **Arial photo showing buffers**	**Figure ___** 4
	H 2.2 Corridors and Connections *(see p. 81)* H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft. wide, has at least a 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? *(Dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor).* **YES = 4 points** (go to H 2.3) **NO** = go to H 2.2.2 H. 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50 ft. wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR a Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above? **YES = 2 points** (go to H 2.3) **NO** = go to H 2.2.3 H. 2.2.3 Is the wetland: • Within 5 mi (8km) of a brackish or salt water estuary OR • Within 3 miles of a large field or pasture (> 40 acres) OR **YES** = 1 point • Within 1 mile of a lake greater than 20 acres? **NO** = 0 points	2

Comments:

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Wetland name or number C

	H 2.3 Near or adjacent to other priority habitats listed by WDFW (see p. 82): Which of the following priority habitats are within 330 ft. (100m) of the wetland? *NOTE: the connections do not have to be relatively undisturbed. These are DFW definitions. Check with your local DFW biologist if there are any questions.* ___ **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other. ___ **Aspen Stands**: Pure or mixed stands of aspen greater than 0.8 ha (2 acres) ___ **Cliffs**: Greater than 7.6m (25 ft) high and occurring below 5000 ft. ___ **Old-growth forests**: (Old growth west of Cascade Crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings, with at least 20 trees/ha (8 trees/acre) > 81cm (32 in) dbh or > 200 years of age. ___ **Mature forests**: Stands with average diameters exceeding 53cm (21 in) 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. ___ **Prairies**: Relatively undisturbed areas (as indicated by dominance of native plants) where greases and/or forbs form the natural climax plant community. ___ **Talus**: Homogenous areas of rock rubble ranging in average size 0.15 – 2.0m (0.5 – 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs. ___ **Caves**: A naturally occurring cavity, recess, void, or system of interconnected passages. ___ **Oregon white Oak**: Woodlands stands of pure oak or oak/conifer associations where canopy coverage of the oak component of the stand is 25%. ___ **Urban Natural Open Space**: A priority species resides within or is adjacent to the open space and uses it for breeding and/or regular feeding; and/or the open space functions as a corridor connecting other *priority habitats*, especially those that would otherwise be isolated; and/or the open space is an isolated remnant of natural habitat larger than 4 ha (10 acres) and is surrounded by urban development. ✓ **Estuary/Estuary-like**: Deepwater tidal habitats and adjacent tidal wetlands, usually semi-enclosed by land but with open, partly obstructed or sporadic access to the open ocean, and in which ocean water is at least occasionally diluted by freshwater runoff from the land. The salinity may be periodically increased above that of the open ocean by evaporation. Along some low-energy coastlines there is appreciable dilution of sea water. Estuarine habitat extends upstream and landward to where ocean-derived salts measure less than 0.5 ppt. during the period of average annual low flow. Includes both estuaries and lagoons. ___ **Marine/Estuarine Shorelines**: Shorelines include the intertidal and subtidal zones of beaches, and may also include the backshore and adjacent components of the terrestrial landscape (e.g., cliffs, snags, mature trees, dunes, meadows) that are important to shoreline associated fish and wildlife and that contribute to shoreline function (e.g., sand/rock/log recruitment, nutrient contribution, erosion control). If wetland has 3 or more priority habitats..= 4 points If wetland has 1 priority habit .. = 1 point If wetland has 2 priority habitats .....= 3 points No habitats..... = 0 points Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. (Nearby wetlands are addressed in question H 2.4).	1
	H 2.4 Wetland Landscape: *Choose the **one** description of the landscape around the wetland that best fits (see p. 84)* • There are at least 3 other wetlands within 1/2 mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development.....points = 5 • The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within 1/2 mile .....points = 5 • There are at least 3 other wetlands within 1/2 mile, BUT the connections between them are disturbed. .....points = 3 • The wetland fringe on a lake **with** disturbance and there are 3 other lake-fringe wetlands within 1/2 mile.....points = 3 • There is at least 1 wetland within 1/2 mile .....points = 2 • There are no wetlands within 1/2 mile .....points = 0	3
	H 2 TOTAL Score – opportunity for providing habitat *Add the scores from H2.1, H2.2, H2.3, H2.4*	10
	TOTAL for H 1 from page 8	2
◆	**Total Score for Habitat Functions** Add the points for H 1 and H 2; then ***record the result on p. 1***	12

Comments:

Wetland name or number C

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

	Wetland Type – *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*	
SC1	**Estuarine wetlands?** *(see p.86)* Does the wetland unit 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** ✓	
	SC 1.1 Is the wetland unit 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. 1
	SC 1.2 Is the wetland at least 1 acre in size and meets at least two of the following conditions? **YES** = Category I **NO** = Category II ____ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp,. are only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category 1. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. ____ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland ____ The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	Cat. I Cat. II Dual Rating I/II
SC2	Natural Heritage Wetlands *(see p. 87)* Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland being rated in a Section/Township/Range that contains a natural heritage wetland? *(This question is used to screen out most sites before you need to contact WNHP/DNR.)* S/T/R information from Appendix D ✓ or accessed from WNHP/DNR web site ____ **YES** ____ Contact WNHP/DNR (see p. 79) and go to SC 2.2 **NO** ✓ SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as a site with state threatened or endangered plant species? **YES** = Category 1 **NO** ____ not a Heritage Wetland	Cat I
SC3	**Bogs** *(see p. 87)* Does the wetland **(or any part of the unit)** meet both the criteria for soils and vegetation in bogs? Use the key below to identify if the wetland is a bog. ***If you answer yes you will still need to rate the wetland based on its function.*** 1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of soil profile? (See Appendix B for a field key to identify organic soils)? **YES** = go to question 3 **NO** = go to question 2 2. Does the wetland have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? **YES** = go to question 3 **NO** = is not a bog for purpose of rating 3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? **YES** = Is a bog for purpose of rating **NO** = go to question 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" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog. 4. Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine. WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cover)*? **YES** = Category I **NO** = Is not a bog for purpose of rating	Cat. I

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Wetland name or number C

SC4	**Forested Wetlands** *(see p. 90)* Does the wetland have at least 1 acre of forest that meet one of these criteria for the 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 function.* ____ **Old-growth forests**: (west of Cascade Crest) Stands of at least two three species forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm or more). NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter. ____ **Mature forests**: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have an average diameters (dbh) exceeding 21 inches (53 cm); 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. **YES** = Category I **NO** = ✓ not a forested wetland with special characteristics	**Cat. I**
SC5	**Wetlands in Coastal Lagoons** *(see p. 91)* 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 surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom.)* **YES** = Go to SC 5.1 **NO** ✓ not a wetland in a coastal lagoon SC 5.1 Does the wetland meet all of the following three conditions? ____ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing) and has less than 20% cover of invasive plant species (see list of invasive species on p. 74). ____ At least 3/4 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 acre (4350 square ft.) **YES** = Category I **NO** = Category II	Cat. I Cat. II
SC6	**Interdunal Wetlands** *(see p. 93)* Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? **YES** = Go to SC 6.1 **NO** ✓ not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its functions.*** In practical terms that means the following geographic areas: • Long Beach Peninsula -- lands west of SR 103 • Grayland-Westport -- lands west of SR 105 • Ocean Shores-Copalis – lands west of SR 115 and SR 109 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is one acre or larger? **YES** = Category II **NO** = go to SC 6.2 SC 6.2 Is the wetland between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? **YES** = Category III	**Cat. II** **Cat. III**
◆	**Category of wetland based on Special Characteristics** *Choose the "highest" rating if wetland falls into several categories, and record on p. 1.* If you answered **NO** for all types enter "Not Applicable" on p. 1	N/A

Comments:

Wetland name or number AB

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): AB Date of site visit: 12/12/06

Rated by: P. Toshem Trained by Ecology? Yes ✓ No____ Date of training: 2006

SEC: 3 TWNSHP: 18N RNGE: 1E Is S/T/R in Appendix D? Yes____ No ✓

Map of wetland unit: Figure_____ Estimated size_____

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland: I____ II____ III____ IV____

Category I =	Score > 70
Category II =	Score 51 – 69
Category III =	Score 30 – 50
Category IV =	Score < 30

Score for Water Quality Functions	3
Score for Hydrologic Functions	16
Score for Habitat Functions	16
TOTAL Score for Functions	35

Category based on SPECIAL CHARACTERISTCS of Wetland I____ II____ Does not apply____

Final Category (choose the "highest" category from above") II

Summary of basic information about the wetland unit.

Wetland Unit has Special Characteristics	
Estuarine	
Natural Heritage Wetland	
Bog	
Mature Forest	
Old Growth Forest	
Coastal Lagoon	
Interdunal	
None of the above	✓

Wetland HGM Class used for Rating	
Depressional	✓
Riverine	
Lake-fringe	
Slope	
Flats	
Freshwater Tidal	
Check if unit has multiple HGM classes present	☐

Does the wetland being rated meet any of the criteria below? If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands that Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered* ***animal or plant*** *species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		✓
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered* ***animal*** *species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category 1 Natural Heritage Wetlands (see p. 19 of data form).		✓
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		✓
SP4. *Does the wetland unit have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		✓

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands in to those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Wetland Rating Form – western Washington, version 2 (7/06) Page 1 of 12

Wetland name or number AB

Classification of Vegetated Wetlands for Western Washington

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 (i.e. except during floods)?
   NO – go to 2 **YES** – the wetland class is **Tidal Fringe**
   If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?
   YES – Freshwater Tidal Fringe **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 a Saltwater Tidal Fringe it is rated as an **Estuarine** wetland.* Wetlands that were call estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p. _____).

2. The entire wetland unit is flat and precipitation is 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 meet both of the following criteria?
   _____ The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) where at least 20 acres (8ha) in size;
   _____ At least 30% of the open water area is deeper than 6.6 (2 m)?
   NO – go to 4 **YES** – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the entire wetland 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**?
   NOTE: *Surface water does not pond in these types of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 foot deep).*
   NO – go to 5 **YES** – The wetland class is **Slope**

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

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time of 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 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 your wetland. 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 class listed in column 2 is less than 10% of the unit, classify the wetland using the class that represents more than 90% of the total area.

HGM Classes within the wetland unit being rated	*HGM Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

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

Wetland Rating Form – western Washington, version 2 (7/06) Page 2 of 12

Wetland name or number AB

		Points (only one box per box) (see p. 64)
	Slope Wetlands	
	WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality	
S 1	**Does the wetland have the potential to improve water quality?**	
	S 1.1 Characteristics of average slope of unit: • Slope is 1% or less *(a 1% slope has a 1 ft. vertical drop in elevation for every 100 ft. horizontal distance)*..... 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 inches below the surface (or duff layer) is clay, organic *(Use NRCS definitions)*. **YES** = 3 points **NO** = 0 points	0
	S 1.3 Characteristics of the vegetation in the wetland that trap sediments and pollutants: *Choose the points appropriate for the description that best fits the vegetation in the wetland. Dense vegetation means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 inches.* • Dense, uncut, herbaceous vegetation > 90% of the wetland area ..... points = 6 • Dense, uncut, herbaceous vegetation > 1/2 of area ..... points = 3 • Dense, woody, vegetation > 1/2 of area. ..... points = 2 • Dense, uncut, herbaceous vegetation > 1/4 of area ..... points = 1 • Does not meet any of the criteria above for vegetation ..... points = 0 **Aerial photo or map with vegetation polygons**	**Figure ___** 3
	Total for S 1 *Add the points in the boxes above*	3
S 2	**Does the wetland have the opportunity to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* ___ Grazing in the wetland or within 150 ft ___ Untreated stormwater discharges to wetland ___ Tilled fields, logging, or orchards within 150 ft. of wetland ___ Residential, urban areas, or golf courses are within 150 ft. upslope of wetland ___ Other _____ **YES** multiplier is 2 **NO** multiplier is 1	*(see p. 67)* Multiplier 1
◆	**TOTAL – Water Quality Functions** Multiply the score from S1 by S2; then ***add score to table on p. 1***	3
	HYDROLOGIC FUNCTIONS – Indicators that wetland functions to reduce flooding and stream erosion.	
S 3	**Does the wetland have the potential to reduce flooding and stream erosion?**	*(see p. 68)*
	S 3.1 Characteristics of vegetation 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 > 1/8in), or dense enough to remain erect during surface flows).* • Dense, uncut, **rigid** vegetation covers > 90% of the area of the wetland..... points = 6 • Dense, uncut, **rigid** vegetation> 1/2 area of wetland ..... points = 3 • Dense, uncut, **rigid** vegetation > 1/4 area..... points = 1 • More than 1/4 of area is grazed, mowed, tilled, or vegetation is not rigid..... points = 0	6
	S 3.2 Characteristics of slope wetland that holds back small amounts of flood flows. The slope has small surface depressions that can retain water over at least 10% of its area. **YES** = 2 points **NO** = 0 points	2
	Add the points in the boxes above	8
S 4	**Does the wetland have the opportunity to reduce flooding and erosion?** Is the wetland in a landscape position where the reduction in water velocity it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows? *Note which of the following conditions apply.* ✓ Wetland has surface runoff that drains to a river or stream that has flooding problems ___ Other _____ *(Answer NO if the major source of water is controlled by a reservoir (e.g. wetland is a seep that is on the downstream side of a dam)* **YES** multiplier is 2 **NO** multiplier is 1	*(see p. 70)* Multiplier 2
◆	**TOTAL – Hydrologic Functions** Multiply the score from S3 by S4; then ***add score to table on p. 1***	16

Comments:

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Wetland name or number AB

These questions apply to wetlands of all HGM classes.

HABITAT FUNCTIONS – Indicators that wetland functions to provide important habitat | **Points** (only 1 score per box)

H 1 Does the wetland have the potential to provide habitat for many species?

H 1.1 Vegetation structure *(see P. 72)*: | **Figure ___**

Check the types of vegetation classes present (as defined by Cowardin) – Size threshold for each class is 1/4 acre or more than 10% of the area if unit is smaller than 2.5 acres.

___ Aquatic Bed
___ Emergent plants
___ Scrub/shrub (areas where shrubs have > 30% cover)
___ Forested (areas where trees have > 30% cover)

If the unit has a forested class check if:

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

Add the number of vegetation types that qualify. If you have:
4 structures or more.....points = 4
2 structures.....points = 1

Map of Cowardin vegetation classes
3 structures..... points = 2
1 structure ..... points = 0

Ø

H 1.2 Hydroperiods *(see p.73)*: | **Figure ___**

Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or 1/4 acre to count (see text for descriptions of hydroperiods).

___ Permanently flooded or inundated
___ Seasonally flooded or inundated
___ Occasionally flooded or inundated
___ Saturated only
___ Permanently flowing stream or river in, or adjacent to, the wetland
___ Seasonally flowing stream in, or adjacent to, the wetland
___ **Lake-fringe wetland.....= 2 points**
___ **Freshwater tidal wetland.....= 2 points**

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

Map of hydroperiods

2

H 1.3 Richness of Plant Species *(see p. 75)*:

Count the number of plant species in the wetland that cover at least 10 ft^2 *(different patches of the same species can be combined to meet the size threshold)*

You do not have to name the species. Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle.

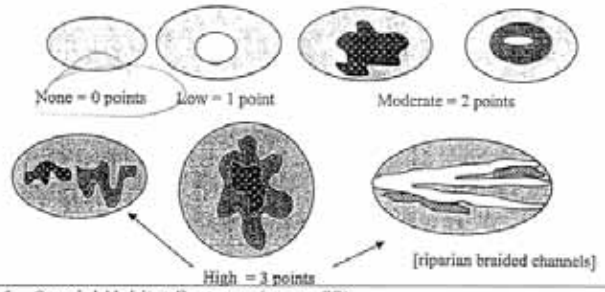
If you counted:
> 19 species ..... points = 2
5 – 19 species ..... points = 1
< 5 species ..... points = 0

List species below if you want to:

1

H 1.4 Interspersion of Habitats *(see p. 76)*:

Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.



Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always "high".

Use map of Cowardin classes.

Figure ___

0

H 1.5 Special Habitat Features *(see p. 77)*:

Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.

___ Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft. long)
___ Standing snags (diameter at the bottom > 4 inches) in the wetland
___ Undercut banks are present for at least 6.6 ft. (2m) and/or overhanging vegetation extends at least 3.3 ft. (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft. (10m)
___ 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 turned grey/brown)*
___ At least 1/4 acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)*
___ Invasive plants cover less than 25% of the wetland area in each stratum of plants
NOTE: The 20% stated in early printings of the manual on page 78 is an error.

3

H 1 TOTAL Score – potential for providing habitat *Add the points in the column above* 6

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Wetland name or number AB

H 2	Does the wetland have the opportunity to provide habitat for many species?	(only 1 score per box)
	H 2.1 Buffers *(see P. 80)*: *Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed".* ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% of circumference. No structures are within the undisturbed part of buffer (relatively undisturbed also means no grazing, no landscaping, no daily human use).. .....**points = 5** ✓ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference.....**points = 4** ___ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference.....**points = 4** ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference.....**points = 3** ___ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference .....**points = 3** **If buffer does not meet any of the criteria above:** ___ No paved areas (except paved trails) or buildings within 25m (80 ft) of wetland > 95% circumference. Light to moderate grazing or lawns are OK.....**points = 2** ___ No paved areas of buildings within 50m of wetland for > 50% circumference. Light to moderate grazing or lawns are OK.....**points = 2** ___ Heavy grazing in buffer .....**points = 1** ___ Vegetated buffers are < 2m wide (6.6 ft) for more than 95% circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland).....**points = 0** ___ Buffer does not meet any of the criteria above .....**points = 1** **Arial photo showing buffers**	**Figure ___** 4
	H 2.2 Corridors and Connections *(see p. 81)* H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft. wide, has at least a 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? *(Dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor).* **YES = 4 points** (go to H 2.3) **NO** = go to H 2.2.2 H. 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50 ft. wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR a Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above? **YES = 2 points** (go to H 2.3) **NO** = go to H 2.2.3 H. 2.2.3 Is the wetland: • Within 5 mi (8km) of a brackish or salt water estuary OR • Within 3 miles of a large field or pasture (> 40 acres) OR **YES** = 1 point • Within 1 mile of a lake greater than 20 acres? **NO** = 0 points	2

Comments:

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Wetland name or number A8

	H 2.3 Near or adjacent to other priority habitats listed by WDFW (see p. 82): Which of the following priority habitats are within 330 ft. (100m) of the wetland? *NOTE: the connections do not have to be relatively undisturbed. These are DFW definitions. Check with your local DFW biologist if there are any questions.* ___ **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other. ___ **Aspen Stands**: Pure or mixed stands of aspen greater than 0.8 ha (2 acres) ___ **Cliffs**: Greater than 7.6m (25 ft) high and occurring below 5000 ft. ___ **Old-growth forests**: (Old growth west of Cascade Crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings, with at least 20 trees/ha (8 trees/acre) > 81cm (32 in) dbh or > 200 years of age. ___ **Mature forests**: Stands with average diameters exceeding 53cm (21 in) 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. ___ **Prairies**: Relatively undisturbed areas (as indicated by dominance of native plants) where greases and/or forbs form the natural climax plant community. ___ **Talus**: Homogenous areas of rock rubble ranging in average size 0.15 – 2.0m (0.5 – 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs. ___ **Caves**: A naturally occurring cavity, recess, void, or system of interconnected passages. ___ **Oregon white Oak**: Woodlands stands of pure oak or oak/conifer associations where canopy coverage of the oak component of the stand is 25%. ___ **Urban Natural Open Space**: A priority species resides within or is adjacent to the open space and uses it for breeding and/or regular feeding; and/or the open space functions as a corridor connecting other *priority habitats*, especially those that would otherwise be isolated; and/or the open space is an isolated remnant of natural habitat larger than 4 ha (10 acres) and is surrounded by urban development. ✓ **Estuary/Estuary-like**: Deepwater tidal habitats and adjacent tidal wetlands, usually semi-enclosed by land but with open, partly obstructed or sporadic access to the open ocean, and in which ocean water is at least occasionally diluted by freshwater runoff from the land. The salinity may be periodically increased above that of the open ocean by evaporation. Along some low-energy coastlines there is appreciable dilution of sea water. Estuarine habitat extends upstream and landward to where ocean-derived salts measure less than 0.5 ppt. during the period of average annual low flow. Includes both estuaries and lagoons. ___ **Marine/Estuarine Shorelines**: Shorelines include the intertidal and subtidal zones of beaches, and may also include the backshore and adjacent components of the terrestrial landscape (e.g., cliffs, snags, mature trees, dunes, meadows) that are important to shoreline associated fish and wildlife and that contribute to shoreline function (e.g., sand/rock/log recruitment, nutrient contribution, erosion control). If wetland has 3 or more priority habitats .= 4 points If wetland has 1 priority habit ...= 1 point If wetland has 2 priority habitats .....= 3 points No habitats.....= 0 points Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. (Nearby wetlands are addressed in question H 2.4).	1
	H 2.4 Wetland Landscape: *Choose the **one** description of the landscape around the wetland that best fits (see p. 84)* • There are at least 3 other wetlands within 1/2 mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development.....points = 5 • The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within 1/2 mile .....points = 5 • There are at least 3 other wetlands within 1/2 mile, BUT the connections between them are disturbed.....points = 3 • The wetland fringe on a lake **with** disturbance and there are 3 other lake-fringe wetlands within 1/2 mile.....points = 3 • There is at least 1 wetland within 1/2 mile.....points = 2 • There are no wetlands within 1/2 mile .....points = 0	3
	H 2 TOTAL Score – opportunity for providing habitat *Add the scores from H2.1, H2.2, H2.3, H2.4*	10
	TOTAL for H 1 from page 8	6
◆	**Total Score for Habitat Functions** Add the points for H 1 and H 2; then ***record the result on p. 1***	16

Comments:

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Wetland name or number A8

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

	Wetland Type – *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*	
SC1	**Estuarine wetlands?** *(see p.86)* Does the wetland unit 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** ✓	
	SC 1.1 Is the wetland unit 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. 1
	SC 1.2 Is the wetland at least 1 acre in size and meets at least two of the following conditions? **YES** = Category I **NO** = Category II ___ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp,. are only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category I. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. ___ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland ___ The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	Cat. I Cat. II Dual Rating I/II
SC2	**Natural Heritage Wetlands** *(see p. 87)* Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland being rated in a Section/Township/Range that contains a natural heritage wetland? *(This question is used to screen out most sites before you need to contact WNHP/DNR.)* S/T/R information from Appendix D _____ or accessed from WNHP/DNR web site ✓ **YES** ____ Contact WNHP/DNR (see p. 79) and go to SC 2.2 **NO** ✓ SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as a site with state threatened or endangered plant species? **YES** = Category 1 **NO** ✓ not a Heritage Wetland	Cat I
SC3	**Bogs** *(see p. 87)* Does the wetland **(or any part of the unit)** meet both the criteria for soils and vegetation in bogs? Use the key below to identify if the wetland is a bog. ***If you answer yes you will still need to rate the wetland based on its function.*** 1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of soil profile? (See Appendix B for a field key to identify organic soils)? **YES** = go to question 3 **NO** = go to question 2 2. Does the wetland have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? **YES** = go to question 3 **NO** = is not a bog for purpose of rating 3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? **YES** = Is a bog for purpose of rating **NO** = go to question 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" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog. 4. Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine. WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cover)*? **YES** = Category I **NO** = Is not a bog for purpose of rating	Cat. I

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Wetland name or number AB

SC4	**Forested Wetlands** *(see p. 90)* Does the wetland have at least 1 acre of forest that meet one of these criteria for the 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 function.* N **Old-growth forests**: (west of Cascade Crest) Stands of at least two three species forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm or more). NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter. ___ **Mature forests**: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have an average diameters (dbh) exceeding 21 inches (53 cm); 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. **YES** = Category I **NO** = ✓ not a forested wetland with special characteristics	Cat. I
SC5	**Wetlands in Coastal Lagoons** *(see p. 91)* 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 surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom.)* **YES** = Go to SC 5.1 **NO** ✓ not a wetland in a coastal lagoon SC 5.1 Does the wetland meet all of the following three conditions? ___ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing) and has less than 20% cover of invasive plant species (see list of invasive species on p. 74). ___ At least 3/4 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 acre (4350 square ft.) **YES** = Category I **NO** = Category II	Cat. I Cat. II
SC6	**Interdunal Wetlands** *(see p. 93)* Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? **YES** = Go to SC 6.1 **NO** ✓ not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its functions.*** In practical terms that means the following geographic areas: • Long Beach Peninsula -- lands west of SR 103 • Grayland-Westport -- lands west of SR 105 • Ocean Shores-Copalis – lands west of SR 115 and SR 109 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is one acre or larger? **YES** = Category II **NO** = go to SC 6.2 SC 6.2 Is the wetland between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? **YES** = Category III	Cat. II Cat. III
◆	**Category of wetland based on Special Characteristics** *Choose the "highest" rating if wetland falls into several categories, and record on p. 1.* If you answered **NO** for all types enter "Not Applicable" on p. 1	NA

Comments:

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Attachment G – Wetland Function Forms

Wetland Functions Field Data Form – WSDOT's BPJ Characterization *

Project: Point Defiance Date: 12/06

Wetland Name: A Biologist: P. Togher

A. Flood Flow Alteration
(Storage and Desynchronization)

1. Wetland occurs in the upper portion of its watershed.
   no
2. Wetland is in a relatively flat area and is capable of retaining higher volumes of water during storm events, than under normal rainfall conditions.
   yes
3. Wetland is a closed (depressional) system.
   no
4. If flowthrough, wetland has constricted outlet with signs of fluctuating water levels, algal mats, and/or lodged debris.
   yes
5. Wetland has dense woody vegetation.
   yes
6. Wetland receives floodwater from an adjacent water course.
   yes
7. Floodwaters come as sheet flow rather than channel flow.
   —

Likely or not likely to provide.
(State your rationale.)

flat topography, ex drainage culverts dense woody veg. support flood flow attenuation

B. Sediment Removal

1. Sources of excess sediment (from tillage or construction) are present upgradient of the wetland.
   no
2. Slow-moving water and/or a deepwater habitat are present in the wetland.
   no
3. Dense herbaceous vegetation is present.
   yes
4. Interspersion of vegetation and water is high in wetland.
   somewhat
5. Ponding of water occurs in the wetland.
   yes
6. Sediment deposits are present in wetland.
   ?

Likely or not likely to provide.
(State your rationale.)

Capacity to provide this function limited by size of wetland and limited sources of sediments

---

* Adapted from the Highway Methodology Workbook Supplement for Wetland Functions and Values (COE, 1995).

wetland A

C. Nutrient and Toxicant Removal

1. Sources of excess nutrients (fertilizers) and toxicants (pesticides and heavy metals) are present upgradient of the wetland. some
2. Wetland is inundated or has indicators that flooding is a seasonal event during the growing season. Low
3. Wetland provides long duration for water detention. no
4. Wetland has at least 30% areal cover of live dense herbaceous vegetation. yes
5. Fine-grained mineral or organic soils are present in the wetland. –

Likely or not likely to provide. (State your rationale.)

Small size and under L inundation/short duration of retention indicates low level of funct. on

D. Erosion Control and Shoreline Stabilization

If associated with water course or shoreline.

1. Wetland has dense, energy absorbing vegetation bordering the water course and no evidence of erosion. yes
2. A herbaceous layer is part of this dense vegetation. yes
3. Trees and shrubs able to withstand erosive flood events are also part of this dense vegetation. yes

Likely or not likely to provide. (State your rationale.) Low

Small size of wetland limits this function.

E. Production of Organic Matter and its Export

1. Wetland has at least 30% areal cover of dense herbaceous vegetation.
2. Woody plants in wetland are mostly deciduous. yes
3. High degree of plant community structure, vegetation density, and species richness present. no
4. Interspersion of vegetation and water is high in wetland. somewhat
5. Wetland is inundated or has indicators that flooding is a seasonal event during the growing season. yes
6. Wetland has outlet from which organic matter is flushed. yes

Likely or not likely to provide. (State your rationale.) mod.

dense herbaceous & shrub vegetation provide organic matter that is exported through culvert.

* Adapted from the Highway Methodology Workbook Supplement for Wetland Functions and Values (COE, 1995).

Wetland A

F. General Habitat Suitability

1. Wetland is not fragmented by development. NO
2. Upland surrounding wetland is undeveloped. NO
3. Wetland has connectivity with other habitat types. Disturbed
4. Diversity of plant species is high. NO
5. Wetland has more than one Cowardin Class, i.e., (PFO, PSS, PEM, PAB, POW, etc.)
6. Has high degree of Cowardin Class interspersion. NO
7. Evidence of wildlife use, e.g., tracks, scat, gnawed stumps, etc., is present NO

Likely or not likely to provide. (State your rationale.)

Small size, disturbed buffers & wetland, low cowardin interspersion limit habitat suitability. Low

G. Habitat for Aquatic Invertebrates

1. Wetland must have permanent or evidence of seasonal inundation for this function to be provided. Some seasonal/temp. inundation
2. Various water depths present in wetland yes
3. Aquatic bed vegetation present. NO
4. Emergent vegetation present within ponded area. yes
5. Cover (i.e., woody debris, rocks, and leaf litter) present within in the standing water area. Some
6. A stream or another wetland within 2 km (1.2 mi) of wetland. yes

Likely or not likely to provide. (State your rationale.)

area of seasonal/temporary inundation one permanent along with emergent vegetation and some cover. streams / other wetlands located nearby. Low

H. Habitat for Amphibians

1. Wetland contains areas of seasonal and/or permanent standing water in most years. (Must be present for this function to be provided) yes
2. Thin-stemmed emergent and/or floating aquatic vegetation present within areas of seasonal and/or perennial standing water. yes
3. Wetland buffer < 40% developed, i.e., by pavement and/or buildings. NO

Likely or not likely to provide. (State your rationale.)

Some areas of temp/seasonal inundation, emergent vegetation and woody debris are present. Other wetlands located nearby. Mod

* Adapted from the Highway Methodology Workbook Supplement for Wetland Functions and Values (COE, 1995).

Wetland A

4. Woody debris present within wetland. Yes

5. Lands within 1 km (0.6 mi) of wetland are greater than or equal to 40% undeveloped (e.g., green belts, forest, grassland, agricultural). NO

6. Other wetlands and/or an intermittent or perennial stream within 1 km (0.6 mi) of wetland. Yes

Likely or not likely to provide. (State your rationale.)

I. Habitat for Wetland-Associated Mammals

1. Permanent water present within the wetland. (Must be present for this function to be provided.) Yes

2. Presence of emergent vegetation in areas of permanent water. NO

3. Areas containing dense shrubs and/or trees are present within wetland or its buffer. Yes

4. Interspersion between different strata of vegetation. NO

5. Interspersion between permanent open water (without vegetation) and permanent water with vegetation. Yes

6. Presence of banks suitable for denning. NO

7. Evidence of wildlife use, e.g., dens, tracks, scat, gnawed stumps, etc., is present.

Likely or not likely to provide. (State your rationale.)

Dense shrubs & interspersed water provide potential habitat. Little opp'ty for denning sites. Low mod

J. Habitat for Wetland-Associated Birds

1. Wetland has 30 to 50% shallow open water and/or aquatic bed classes present within the wetland. No perm open H2O

2. Emergent vegetation class present within the wetland. NO

3. Forested and scrub-shrub classes present within the wetland or its buffer. Yes

4. Snags present in wetland or its buffer. Likely

5. Sand bars and/or mud flats present within the wetland. NO

Likely or not likely to provide. (State your rationale.) Low

emergent vegetation and snags provide potential nesting habitat; inverts provide forage opp'tys.

* Adapted from the Highway Methodology Workbook Supplement for Wetland Functions and Values (COE, 1995).

Wetland A

	Likely or not likely to provide. (State your rationale.)
6. Wetland contains invertebrates, amphibians, and/or fish. yes	
7. Buffer contains relatively undisturbed grassland shrub and/or forest habitats. NO	
8. Lands within 1 km (0.6 mi) of the wetland are greater than or equal to 40% undeveloped (e.g., green belts, forest, grassland, agricultural). NO	
K. General Fish Habitat (*Must be associated with a fish-bearing water.*)	Likely or not likely to provide. (State your rationale.)
1. Wetland has a perennial or intermittent surface-water connection to a fish-bearing water body yes	Stream has perm H2O, with shading vegetation in areas of ponding provides potential forage
2. Wetland has sufficient size and depth of open water so as not to freeze completely during winter. yes	
3. Observation of fish. NO	
4. Herbaceous and/or woody vegetation is present in wetland and/or buffer to provide cover, shade, and/or detrital matter. yes	
5. Spawning areas are present (aquatic vegetation and/or gravel beds). yes	
L. Native Plant Richness	Likely or not likely to provide. (State your rationale.) Low
1. Dominant and codominant plants are native. yes	dominant species are native, however invasives are present, limited strata and species diversity.
2. Wetland contains two or more Cowardin Classes. NO	
3. Wetland has three or more strata of vegetation. yes	
4. Wetland has mature trees. NO	
M. Educational or Scientific Value	Likely or not likely to provide. (State your rationale.)
1. Site has documented scientific or educational use. NO	Private ownership and limited access limit educational opptys.
2. Wetland is in public ownership. NO	
3. Parking at site is suitable for a school bus. NO	

* Adapted from the Highway Methodology Workbook Supplement for Wetland Functions and Values (COE, 1995).

wetland A

N. Uniqueness and Heritage

1. Wetland contains documented occurrence of a state– or federally listed threatened or endangered species.
   NO
2. Wetland contains documented critical habitat, high quality ecosystems, or priority species respectively designated by the U.S. Fish and Wildlife Service, the WDNR's Natural Heritage Program, or WDFW's Priority Habitats and Species Program.
   NO
3. Wetland is part of a National Natural Landmark designated by the National Park Service or a Natural Heritage Site designated by WDNR.
   NO
4. Wetland has biological, geological, or other features that are determined rare by the local jurisdiction.
   NO
5. Wetland has been determined significant by the local jurisdiction because it provides functions scarce for the area. NO
6. Wetland is part of …
   - an estuary,
   - a bog,
   - a mature forest.

   NO

Likely or not likely to provide. (State your rationale.)
NO PHS, ESA species present; vegetation does not represent locally unique assemblage

* Adapted from the Highway Methodology Workbook Supplement for Wetland Functions and Values (COE, 1995).

Wetland Functions Field Data Form – WSDOT's BPJ Characterization *

Project: Point Defiance Date: 12/06

Wetland Name: E Biologist: P. Togher

A. Flood Flow Alteration
(Storage and Desynchronization)

1. Wetland occurs in the upper portion of its watershed. NO
2. Wetland is in a relatively flat area and is capable of retaining higher volumes of water during storm events, than under normal rainfall conditions. NO
3. Wetland is a closed (depressional) system. NO
4. If flowthrough, wetland has constricted outlet with signs of fluctuating water levels, algal mats, and/or lodged debris. yes
5. Wetland has dense woody vegetation. NO
6. Wetland receives floodwater from an adjacent water course. yes
7. Floodwaters come as sheet flow rather than channel flow. NO

Likely or not likely to provide.
(State your rationale.)

Wetland E is small and located in a narrow reach of Murray Creek. The stream is conveyed into/out of wetland in culverts. Support for this function is limited. Low

B. Sediment Removal

1. Sources of excess sediment (from tillage or construction) are present upgradient of the wetland. NO
2. Slow-moving water and/or a deepwater habitat are present in the wetland. yes
3. Dense herbaceous vegetation is present. NO
4. Interspersion of vegetation and water is high in wetland. NO
5. Ponding of water occurs in the wetland. yes
6. Sediment deposits are present in wetland. Likely

Likely or not likely to provide.
(State your rationale.)

Slowmoving water/ponding areas present in wetland, however, few sources of sediments present. L

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* Adapted from the Highway Methodology Workbook Supplement for Wetland Functions and Values (COE, 1995).

WL E

wetland E

C. Nutrient and Toxicant Removal

1. Sources of excess nutrients (fertilizers) and toxicants (pesticides and heavy metals) are present upgradient of the wetland. Likely
2. Wetland is inundated or has indicators that flooding is a seasonal event during the growing season. Likely
3. Wetland provides long duration for water detention. NO
4. Wetland has at least 30% areal cover of live dense herbaceous vegetation. Likely 30%
5. Fine-grained mineral or organic soils are present in the wetland. Likely

Likely or not likely to provide. (State your rationale.)

upslope developed area likely contributes nutrients/toxicants to Murray Creek. Pending presence of Emergent veg provide potential for Removal

L

D. Erosion Control and Shoreline Stabilization

If associated with water course or shoreline.

1. Wetland has dense, energy absorbing vegetation bordering the water course and no evidence of erosion. NO
2. A herbaceous layer is part of this dense vegetation. Yes
3. Trees and shrubs able to withstand erosive flood events are also part of this dense vegetation. No

Likely or not likely to provide. (State your rationale.)

Though associated w/ a stream, emr. vegetation provides little stabilization

E. Production of Organic Matter and its Export

1. Wetland has at least 30% areal cover of dense herbaceous vegetation. Likely
2. Woody plants in wetland are mostly deciduous. none
3. High degree of plant community structure, vegetation density, and species richness present. NO
4. Interspersion of vegetation and water is high in wetland. NO
5. Wetland is inundated or has indicators that flooding is a seasonal event during the growing season. Yes
6. Wetland has outlet from which organic matter is flushed. Yes

Likely or not likely to provide. (State your rationale.)

wetland E has emergent vegetation that provides organic matter which if flushed downstream in Murray Creek. Small size, limited diversity & limited interspersion limit this function.

L

* Adapted from the Highway Methodology Workbook Supplement for Wetland Functions and Values (COE, 1995).

wetland E

F. General Habitat Suitability

1. Wetland is not fragmented by development. N
2. Upland surrounding wetland is undeveloped. N
3. Wetland has connectivity with other habitat types. N
4. Diversity of plant species is high. N
5. Wetland has more than one Cowardin Class, i.e., (PFO, PSS, PEM, PAB, POW, etc.) N
6. Has high degree of Cowardin Class interspersion. N
7. Evidence of wildlife use, e.g., tracks, scat, gnawed stumps, etc., is present

Likely or not likely to provide. (State your rationale.)

wetland has limited potential for seasonal habitat.

G. Habitat for Aquatic Invertebrates

1. Wetland must have permanent or evidence of seasonal inundation for this function to be provided. yes
2. Various water depths present in wetland yes
3. Aquatic bed vegetation present. no
4. Emergent vegetation present within ponded area. yes
5. Cover (i.e., woody debris, rocks, and leaf litter) present within in the standing water area. unlikely
6. A stream or another wetland within 2 km (1.2 mi) of wetland. yes

Likely or not likely to provide. (State your rationale.)

mostly flowing water — murray Creek provides some potential invert. habitat. L

H. Habitat for Amphibians

1. Wetland contains areas of seasonal and/or permanent standing water in most years. (Must be present for this function to be provided) Y
2. Thin-stemmed emergent and/or floating aquatic vegetation present within areas of seasonal and/or perennial standing water. Y
3. Wetland buffer < 40% developed, i.e., by pavement and/or buildings. N

Likely or not likely to provide. (State your rationale.)

seasonal/permanent H_2O and emergent vegetation provide limited amphib. habitat. L

* Adapted from the Highway Methodology Workbook Supplement for Wetland Functions and Values (COE, 1995).

wetland E

	Likely or not likely to provide. (State your rationale.)
4. Woody debris present within wetland. N	
5. Lands within 1 km (0.6 mi) of wetland are greater than or equal to 40% undeveloped (e.g., green belts, forest, grassland, agricultural). NO	
6. Other wetlands and/or an intermittent or perennial stream within 1 km (0.6 mi) of wetland. YES	
I. Habitat for Wetland-Associated Mammals	Likely or not likely to provide. (State your rationale.)
1. Permanent water present within the wetland. (Must be present for this function to be provided.) YES	Permanent H_2O is present, but denning sites & forage supplies are limited.
2. Presence of emergent vegetation in areas of permanent water. YES	
3. Areas containing dense shrubs and/or trees are present within wetland or its buffer. NO	
4. Interspersion between different strata of vegetation. NO	
5. Interspersion between permanent open water (without vegetation) and permanent water with vegetation. Limited	
6. Presence of banks suitable for denning. NO	
7. Evidence of wildlife use, e.g., dens, tracks, scat, gnawed stumps, etc., is present. NO	
J. Habitat for Wetland-Associated Birds	Likely or not likely to provide. (State your rationale.)
1. Wetland has 30 to 50% shallow open water and/or aquatic bed classes present within the wetland. NO	Permanent H_2O, emergent vegetation and fish/other forage present. other habitat elements limited.
2. Emergent vegetation class present within the wetland. YES	
3. Forested and scrub-shrub classes present within the wetland or its buffer. NO	
4. Snags present in wetland or its buffer. NO	
5. Sand bars and/or mud flats present within the wetland. NO	

L

* Adapted from the Highway Methodology Workbook Supplement for Wetland Functions and Values (COE, 1995).

wetland E

	Likely or not likely to provide. (State your rationale.)
6. Wetland contains invertebrates, amphibians, and/or fish. yes	
7. Buffer contains relatively undisturbed grassland shrub and/or forest habitats. No	
8. Lands within 1 km (0.6 mi) of the wetland are greater than or equal to 40% undeveloped (e.g., green belts, forest, grassland, agricultural). No	
K. General Fish Habitat (*Must be associated with a fish-bearing water.*)	Likely or not likely to provide. (State your rationale.)
1. Wetland has a perennial or intermittent surface-water connection to a fish-bearing water body yes	Murray Creek appears to provide habitat for some salmonids. L-M
2. Wetland has sufficient size and depth of open water so as not to freeze completely during winter. yes	
3. Observation of fish. yes	
4. Herbaceous and/or woody vegetation is present in wetland and/or buffer to provide cover, shade, and/or detrital matter. yes	
5. Spawning areas are present (aquatic vegetation and/or gravel beds). ?	
L. Native Plant Richness	Likely or not likely to provide. (State your rationale.)
1. Dominant and codominant plants are native. N (only some)	low plant diversity and structural diversity.
2. Wetland contains two or more Cowardin Classes. N	
3. Wetland has three or more strata of vegetation. N	
4. Wetland has mature trees. N	
M. Educational or Scientific Value	Likely or not likely to provide. (State your rationale.)
1. Site has documented scientific or educational use.	limited access precludes use for education
2. Wetland is in public ownership.	
3. Parking at site is suitable for a school bus.	

* Adapted from the Highway Methodology Workbook Supplement for Wetland Functions and Values (COE, 1995).

Wetland E

N. Uniqueness and Heritage

1. Wetland contains documented occurrence of a state– or federally listed threatened or endangered species.
   No
2. Wetland contains documented critical habitat, high quality ecosystems, or priority species respectively designated by the U.S. Fish and Wildlife Service, the WDNR's Natural Heritage Program, or WDFW's Priority Habitats and Species Program.
   No
3. Wetland is part of a National Natural Landmark designated by the National Park Service or a Natural Heritage Site designated by WDNR.
   No
4. Wetland has biological, geological, or other features that are determined rare by the local jurisdiction.
   No
5. Wetland has been determined significant by the local jurisdiction because it provides functions scarce for the area. No
6. Wetland is part of …
   - an estuary,
   - a bog,
   - a mature forest.

Likely or not likely to provide.
(State your rationale.)

* Adapted from the Highway Methodology Workbook Supplement for Wetland Functions and Values (COE, 1995).

Wetland Functions Field Data Form – WSDOT's BPJ Characterization *

Project: Point Defiance Bypass Date: 12/06

Wetland Name: C Biologist: P. Toghen

A. Flood Flow Alteration
(Storage and Desynchronization)

1. Wetland occurs in the upper portion of its watershed. Y
2. Wetland is in a relatively flat area and is capable of retaining higher volumes of water during storm events, than under normal rainfall conditions. N
3. Wetland is a closed (depressional) system. N
4. If flowthrough, wetland has constricted outlet with signs of fluctuating water levels, algal mats, and/or lodged debris. N
5. Wetland has dense woody vegetation. Y
6. Wetland receives floodwater from an adjacent water course. N
7. Floodwaters come as sheet flow rather than channel flow. N

Likely or not likely to provide.
(State your rationale.)

slope wetland does not retain detain water

B. Sediment Removal

1. Sources of excess sediment (from tillage or construction) are present upgradient of the wetland. N
2. Slow-moving water and/or a deepwater habitat are present in the wetland. N
3. Dense herbaceous vegetation is present. Y
4. Interspersion of vegetation and water is high in wetland. Y
5. Ponding of water occurs in the wetland. N
6. Sediment deposits are present in wetland. N

Likely or not likely to provide.
(State your rationale.)

slope wetland – no opty to trap sediments.

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* Adapted from the Highway Methodology Workbook Supplement for Wetland Functions and Values (COE, 1995).

wetland C

C. Nutrient and Toxicant Removal

1. Sources of excess nutrients (fertilizers) and toxicants (pesticides and heavy metals) are present upgradient of the wetland. N
2. Wetland is inundated or has indicators that flooding is a seasonal event during the growing season. N
3. Wetland provides long duration for water detention. N
4. Wetland has at least 30% areal cover of live dense herbaceous vegetation. Y
5. Fine-grained mineral or organic soils are present in the wetland. yes

Likely or not likely to provide.
(State your rationale.)

upslope relatively undeveloped, slope we have No. apply to trap nutrients/ toxicants.

D. Erosion Control and Shoreline Stabilization

If associated with water course or shoreline.

1. Wetland has dense, energy absorbing vegetation bordering the water course and no evidence of erosion.
2. A herbaceous layer is part of this dense vegetation.
3. Trees and shrubs able to withstand erosive flood events are also part of this dense vegetation.

Likely or not likely to provide.
(State your rationale.)

No + associated w/ shoreline/ stream.

E. Production of Organic Matter and its Export

1. Wetland has at least 30% areal cover of dense herbaceous vegetation. yes
2. Woody plants in wetland are mostly deciduous. Y
3. High degree of plant community structure, vegetation density, and species richness present. N
4. Interspersion of vegetation and water is high in wetland. Y
5. Wetland is inundated or has indicators that flooding is a seasonal event during the growing season. No
6. Wetland has outlet from which organic matter is flushed. Yes

Likely or not likely to provide.
(State your rationale.)

Dense deciduous vegetation produces carbon that can be exported via ditch.

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* Adapted from the Highway Methodology Workbook Supplement for Wetland Functions and Values (COE, 1995).

wetland C

	Likely or not likely to provide. (State your rationale.)
F. General Habitat Suitability	
1. Wetland is not fragmented by development.	wetland C likely appears to provide limited habitat. It does provide a potential source of H_2O Low
2. Upland surrounding wetland is undeveloped.	
3. Wetland has Partially connectivity with other habitat types.	
4. Diversity of plant species is high. Y	
5. Wetland has more than one Cowardin Class, i.e., (PFO, PSS, PEM, PAB, POW, etc.) NO	
6. Has high degree of Cowardin Class interspersion. NO	
7. Evidence of wildlife use, e.g., tracks, scat, gnawed stumps, etc., is present some scat	
G. Habitat for Aquatic Invertebrates	Likely or not likely to provide. (State your rationale.)
1. Wetland must have permanent or evidence of seasonal inundation for this function to be provided. NO	No permanent or seasonal inundation.
2. Various water depths present in wetland	
3. Aquatic bed vegetation present.	
4. Emergent vegetation present within ponded area.	
5. Cover (i.e., woody debris, rocks, and leaf litter) present within in the standing water area.	
6. A stream or another wetland within 2 km (1.2 mi) of wetland.	
H. Habitat for Amphibians	Likely or not likely to provide. (State your rationale.)
1. Wetland contains areas of seasonal and/or permanent standing water in most years. (Must be present for this function to be provided) NO	other nearby wetlands may provide spawning habitat; wetland C likely provides modest foraging habitat. Low
2. Thin-stemmed emergent and/or floating aquatic vegetation present within areas of seasonal and/or perennial standing water. NO	
3. Wetland buffer < 40% developed, i.e., by pavement and/or buildings. NO	

* Adapted from the Highway Methodology Workbook Supplement for Wetland Functions and Values (COE, 1995).

wetland C

4. Woody debris present within wetland. yes

5. Lands within 1 km (0.6 mi) of wetland are greater than or equal to 40% undeveloped (e.g., green belts, forest, grassland, agricultural). yes

6. Other wetlands and/or an intermittent or perennial stream within 1 km (0.6 mi) of wetland. yes

Likely or not likely to provide.
(State your rationale.)

I. Habitat for Wetland-Associated Mammals

1. Permanent water present within the wetland. (Must be present for this function to be provided.)

2. Presence of emergent vegetation in areas of permanent water.

3. Areas containing dense shrubs and/or trees are present within wetland or its buffer.

4. Interspersion between different strata of vegetation.

5. Interspersion between permanent open water (without vegetation) and permanent water with vegetation.

6. Presence of banks suitable for denning.

7. Evidence of wildlife use, e.g., dens, tracks, scat, gnawed stumps, etc., is present.

Likely or not likely to provide.
(State your rationale.)

no permanent H2O

J. Habitat for Wetland-Associated Birds

1. Wetland has 30 to 50% shallow open water and/or aquatic bed classes present within the wetland. no

2. Emergent vegetation class present within the wetland. no

3. Forested and scrub-shrub classes present within the wetland or its buffer. yes

4. Snags present in wetland or its buffer. yes

5. Sand bars and/or mud flats present within the wetland. no

Likely or not likely to provide.
(State your rationale.)

wetland C has undeveloped buffer and some potential nesting/resting habitat, but limited forage opportunities.

* Adapted from the Highway Methodology Workbook Supplement for Wetland Functions and Values (COE, 1995).

wetland C

6. Wetland contains invertebrates, amphibians, and/or fish. likely	Likely or not likely to provide. (State your rationale.)
7. Buffer contains relatively undisturbed grassland shrub and/or forest habitats. yes	
8. Lands within 1 km (0.6 mi) of the wetland are greater than or equal to 40% undeveloped (e.g., green belts, forest, grassland, agricultural). yes	
K. General Fish Habitat (*Must be associated with a fish-bearing water.*)	Likely or not likely to provide. (State your rationale.) no fish bearing H_2O
1. Wetland has a perennial or intermittent surface-water connection to a fish-bearing water body	
2. Wetland has sufficient size and depth of open water so as not to freeze completely during winter.	
3. Observation of fish.	
4. Herbaceous and/or woody vegetation is present in wetland and/or buffer to provide cover, shade, and/or detrital matter.	
5. Spawning areas are present (aquatic vegetation and/or gravel beds).	
L. Native Plant Richness	Likely or not likely to provide. (State your rationale.) non-natives / invasives are common
1. Dominant and codominant plants are native. no	
2. Wetland contains two or more Cowardin Classes. no	
3. Wetland has three or more strata of vegetation. yes	
4. Wetland has mature trees. no	
M. Educational or Scientific Value	Likely or not likely to provide. (State your rationale.) limited access for educational/scientific use.
1. Site has documented scientific or educational use.	
2. Wetland is in public ownership.	
3. Parking at site is suitable for a school bus.	

* Adapted from the Highway Methodology Workbook Supplement for Wetland Functions and Values (COE, 1995).

wetland C

N. Uniqueness and Heritage

1. Wetland contains documented occurrence of a state– or federally listed threatened or endangered species. NO

2. Wetland contains documented critical habitat, high quality ecosystems, or priority species respectively designated by the U.S. Fish and Wildlife Service, the WDNR's Natural Heritage Program, or WDFW's Priority Habitats and Species Program. NO

3. Wetland is part of a National Natural Landmark designated by the National Park Service or a Natural Heritage Site designated by WDNR. NO

4. Wetland has biological, geological, or other features that are determined rare by the local jurisdiction. NO

5. Wetland has been determined significant by the local jurisdiction because it provides functions scarce for the area. NO

6. Wetland is part of …
   - an estuary,
   - a bog,
   - a mature forest.

   NO

Likely or not likely to provide.
(State your rationale.)

no unique rare habitats.

* Adapted from the Highway Methodology Workbook Supplement for Wetland Functions and Values (COE, 1995).

Wetland Functions Field Data Form – WSDOT's BPJ Characterization *

Project: Point Defiance Date: 12/06

Wetland Name: AB Biologist: P. Togher

A. Flood Flow Alteration
(Storage and Desynchronization)

1. Wetland occurs in the upper portion of its watershed.
2. Wetland is in a relatively flat area and is capable of retaining higher volumes of water during storm events, than under normal rainfall conditions.
   not flat, but outlet is constricted
3. Wetland is a closed (depressional) system.
   NO
4. If flowthrough, wetland has constricted outlet with signs of fluctuating water levels, algal mats, and/or lodged debris.
   yes – no mats but lodged debris
5. Wetland has dense woody vegetation.
   yes
6. Wetland receives floodwater from an adjacent water course.
   NO
7. Floodwaters come as sheet flow rather than channel flow.

Likely or not likely to provide.
(State your rationale.)

wetland is a flow through link
w/ with lodged debris
near constricted outlet/
debris dam. no
overbank / sheetflow
from stream, and
wl. is relatively small.

B. Sediment Removal

1. Sources of excess sediment (from tillage or construction) are present upgradient of the wetland. NO
2. Slow-moving water and/or a deepwater habitat are present in the wetland. NO
3. Dense herbaceous vegetation is present. yes
4. Interspersion of vegetation and water is high in wetland. yes
5. Ponding of water occurs in the wetland. yes
6. Sediment deposits are present in wetland. no

Likely or not likely to provide.
(State your rationale.)

Herbaceous vegetation is
present along w/ vegetation
interspersed w H_2O, m
however, sources of
sediment are limited.

* Adapted from the Highway Methodology Workbook Supplement for Wetland Functions and Values (COE, 1995).

wetland AB

C. Nutrient and Toxicant Removal

1. Sources of excess nutrients (fertilizers) and toxicants (pesticides and heavy metals) are present upgradient of the wetland. NO
2. Wetland is inundated or has indicators that flooding is a seasonal event during the growing season. Yes
3. Wetland provides long duration for water detention. NO
4. Wetland has at least 30% areal cover of live dense herbaceous vegetation. Yes
5. Fine-grained mineral or organic soils are present in the wetland. Yes.

Likely or not likely to provide. (State your rationale.)

no nutrient/toxicant sources upslope

D. Erosion Control and Shoreline Stabilization

If associated with water course or shoreline. Yes

1. Wetland has dense, energy absorbing vegetation bordering the water course and no evidence of erosion. Yes
2. A herbaceous layer is part of this dense vegetation. Yes
3. Trees and shrubs able to withstand erosive flood events are also part of this dense vegetation. Yes

Likely or not likely to provide. (State your rationale.)

wetland A-2 is located along a stream and has dense herbaceous & woody vegetation. small size limits the performance of this function. M

E. Production of Organic Matter and its Export

1. Wetland has at least 30% areal cover of dense herbaceous vegetation. Yes
2. Woody plants in wetland are mostly deciduous. Yes
3. High degree of plant community structure, vegetation density, and species richness present. NO
4. Interspersion of vegetation and water is high in wetland. Yes
5. Wetland is inundated or has indicators that flooding is a seasonal event during the growing season. Yes
6. Wetland has outlet from which organic matter is flushed. Yes.

Likely or not likely to provide. (State your rationale.)

Dense vegetation and interspersion provide organic material & transport potential. wetland A2 ends in a culvert that can flush C downstream. M

* Adapted from the Highway Methodology Workbook Supplement for Wetland Functions and Values (COE, 1995).

wetland AB

F. General Habitat Suitability

1. Wetland is not fragmented by development. No
2. Upland surrounding wetland is undeveloped. ≤50%
3. Wetland has connectivity with other habitat types. yes – v pos OTR
4. Diversity of plant species is high. moderate
5. Wetland has more than one Cowardin Class, i.e., (PFO, PSS, PEM, PAB, POW, etc.) no
6. Has high degree of Cowardin Class interspersion. no
7. Evidence of wildlife use, e.g., tracks, scat, gnawed stumps, etc., is present no

Likely or not likely to provide. (State your rationale.)

wetland AB is located in a broad, relatively undisturbed upland on ft. lewis. — M

G. Habitat for Aquatic Invertebrates

1. Wetland must have permanent or evidence of seasonal inundation for this function to be provided. yes
2. Various water depths present in wetland yes
3. Aquatic bed vegetation present. no
4. Emergent vegetation present within ponded area. yes
5. Cover (i.e., woody debris, rocks, and leaf litter) present within in the standing water area. yes
6. A stream or another wetland within 2 km (1.2 mi) of wetland. yes

Likely or not likely to provide. (State your rationale.)

Dense emergent vegetation, varying levels of water and cover provide good habitat potential for inverts. — H

H. Habitat for Amphibians

1. Wetland contains areas of seasonal and/or permanent standing water in most years. (Must be present for this function to be provided)
2. Thin-stemmed emergent and/or floating aquatic vegetation present within areas of seasonal and/or perennial standing water. no
3. Wetland buffer < 40% developed, i.e., by pavement and/or buildings. yes

Likely or not likely to provide. (State your rationale.)

small area of ponding limits potential amphib. habitat — M-H

* Adapted from the Highway Methodology Workbook Supplement for Wetland Functions and Values (COE, 1995).

wetland AB

4. Woody debris present within wetland. Yes

5. Lands within 1 km (0.6 mi) of wetland are greater than or equal to 40% undeveloped (e.g., green belts, forest, grassland, agricultural). Yes

6. Other wetlands and/or an intermittent or perennial stream within 1 km (0.6 mi) of wetland. Yes

I. Habitat for Wetland-Associated Mammals

1. Permanent water present within the wetland. (Must be present for this function to be provided.) No - limited
2. Presence of emergent vegetation in areas of permanent water. No perm H_2O
3. Areas containing dense shrubs and/or trees are present within wetland or its buffer. Yes
4. Interspersion between different strata of vegetation. No
5. Interspersion between permanent open water (without vegetation) and permanent water with vegetation. No
6. Presence of banks suitable for denning. No
7. Evidence of wildlife use, e.g., dens, tracks, scat, gnawed stumps, etc., is present. No

J. Habitat for Wetland-Associated Birds

1. Wetland has 30 to 50% shallow open water and/or aquatic bed classes present within the wetland. No
2. Emergent vegetation class present within the wetland. No
3. Forested and scrub-shrub classes present within the wetland or its buffer. Yes
4. Snags present in wetland or its buffer. Yes
5. Sand bars and/or mud flats present within the wetland. No

Likely or not likely to provide. (State your rationale.)

Likely or not likely to provide. (State your rationale.)
Potential for water mammal habitat is limited by small size of wetland and location relatively far from other wetlands

Likely or not likely to provide. (State your rationale.)
Potential invert habitat & forest cover provide limited habitat for aquatic birds

* Adapted from the Highway Methodology Workbook Supplement for Wetland Functions and Values (COE, 1995).

wetland AB

	Likely or not likely to provide. (State your rationale.)
6. Wetland contains invertebrates, amphibians, and/or fish. likely	
7. Buffer contains relatively undisturbed grassland shrub and/or forest habitats. yes	
8. Lands within 1 km (0.6 mi) of the wetland are greater than or equal to 40% undeveloped (e.g., green belts, forest, grassland, agricultural). Yes	
K. General Fish Habitat *(Must be associated with a fish-bearing water.)*	Likely or not likely to provide. (State your rationale.)
1. Wetland has a perennial or intermittent surface-water connection to a fish-bearing water body	A-2 is separated from other nisqually wetlands by a culvert & very steep slope. Likely inaccessible to anadromous fish.
2. Wetland has sufficient size and depth of open water so as not to freeze completely during winter.	
3. Observation of fish.	
4. Herbaceous and/or woody vegetation is present in wetland and/or buffer to provide cover, shade, and/or detrital matter.	
5. Spawning areas are present (aquatic vegetation and/or gravel beds).	
L. Native Plant Richness	Likely or not likely to provide. (State your rationale.)
1. Dominant and codominant plants are native. Yes	few mature trees and limited diversity limit this function
2. Wetland contains two or more Cowardin Classes. NO	
3. Wetland has three or more strata of vegetation. NO	
4. Wetland has mature trees. yes.	
M. Educational or Scientific Value	Likely or not likely to provide. (State your rationale.)
1. Site has documented scientific or educational use. NO	military ownership & lack of access prohibit most educational use.
2. Wetland is in public ownership. NO	
3. Parking at site is suitable for a school bus. NO	

* Adapted from the Highway Methodology Workbook Supplement for Wetland Functions and Values (COE, 1995).

wetland AB

N. Uniqueness and Heritage

		Likely or not likely to provide. (State your rationale.)
1. Wetland contains documented occurrence of a state– or federally listed threatened or endangered species.	No	No ESA species present, or unusual/rare plants assemblages.
2. Wetland contains documented critical habitat, high quality ecosystems, or priority species respectively designated by the U.S. Fish and Wildlife Service, the WDNR's Natural Heritage Program, or WDFW's Priority Habitats and Species Program.	NO	
3. Wetland is part of a National Natural Landmark designated by the National Park Service or a Natural Heritage Site designated by WDNR.	NO	
4. Wetland has biological, geological, or other features that are determined rare by the local jurisdiction.	NO	
5. Wetland has been determined significant by the local jurisdiction because it provides functions scarce for the area.	NO	
6. Wetland is part of … ➢ an estuary, ➢ a bog, ➢ a mature forest.	NO	

* Adapted from the Highway Methodology Workbook Supplement for Wetland Functions and Values (COE, 1995).