

Appendix J:
Wetlands
Discipline Report

Point Defiance Bypass Project



Wetlands Discipline Report



**Washington State
Department of Transportation**

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Table of Contents

Summary.....	1
Chapter 1 – Project Description	2
Introduction.....	2
Purpose and Need	2
What alternatives are being considered for the Point Defiance Bypass Project?	3
What’s happening in the bypass corridor today?.....	3
What would happen if the Project were not built?.....	4
What are the proposed improvements and related activities of the Point Defiance Bypass Project?	4
What are the proposed operational changes that would result from the Point Defiance Bypass Project?..	5
Chapter 2 – Methodology	7
What regulatory authority applies to the Project?	7
What is the study area for the Project?	8
How was information about wetlands collected?	8
Chapter 3 – Affected Environment	13
Wetland A.....	13
Wetland E.....	14
Wetland C.....	15
Wetland AB	16
What functions do the wetlands provide?.....	17
Chapter 4 – Project Effects	18
Would the Project affect wetlands or wetland buffers?.....	18
What potential indirect and cumulative effects could occur from the Project?.....	19
Chapter 5 – Recommended Minimization Measures.....	20
Best Management Practices.....	20
References.....	22

List of Exhibits

Exhibit 1. Build Alternative Components 6
Exhibit 2. Project Wetland Locations..... 9
Exhibit 3. Wetland Descriptions 13
Exhibit 4. Wetland Functions..... 17

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.

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.

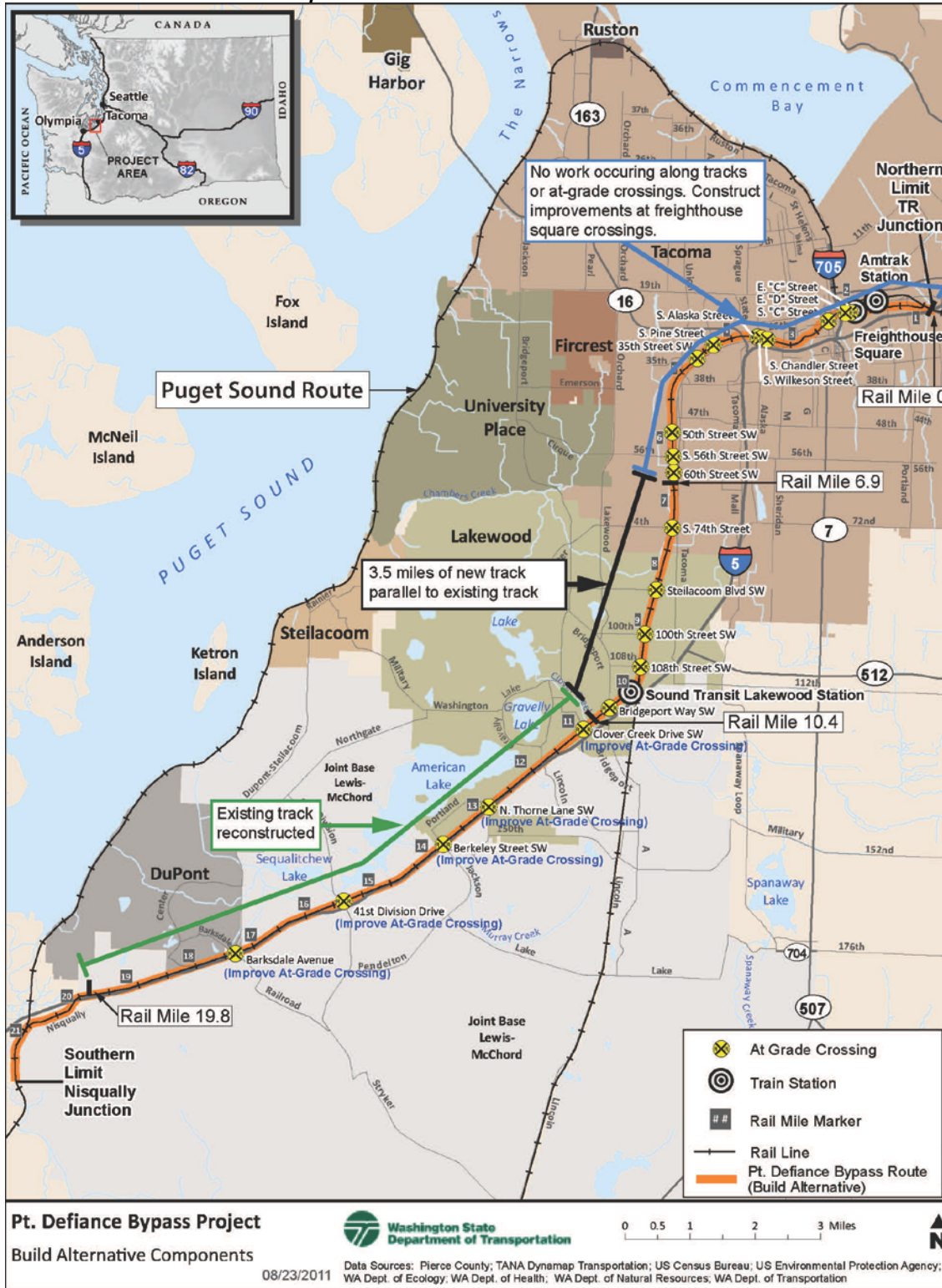
- **Construct New Track Adjacent to the Existing Main Line** – A new 3.5-mile track adjacent to the existing main line would be constructed from South 66th Street (Rail MP 6.9) in Tacoma to between Bridgeport Way SW (Rail MP 10.4) and Clover Creek Drive SW (Rail MP 10.9) in Lakewood.
- **Reconstruct 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.

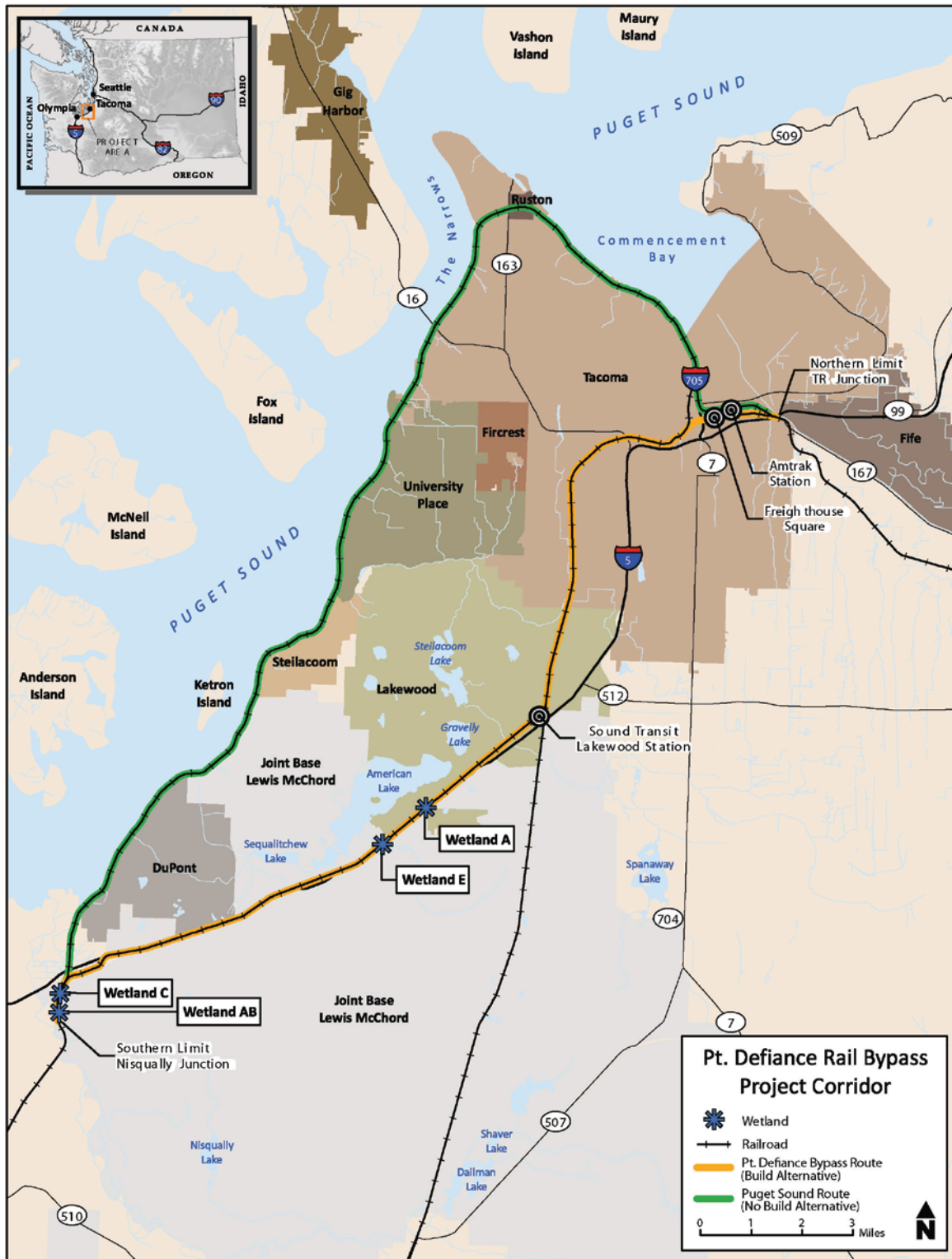
What is the study area for the Project?

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.

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 garryana*), 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 Report⁶). 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
<i>Federal</i>		
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
<i>State</i>		
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
<i>Intergovernmental Agreements</i>		
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
<i>Local</i>		
DuPont Municipal Code Land Use Code (Sensitive Areas), DMC Chapter 25-105	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}	<p>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.</p> <p>Specific wetlands that meet the Category I criteria include:</p> <ol style="list-style-type: none"> 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. 	<p>Category II wetlands are difficult, though not impossible; to replace, and provide high levels of some functions.</p> <p>Specific wetlands that meet the Category II criteria include:</p> <ol style="list-style-type: none"> 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. 	<p>Category III wetlands provide a moderate level of functions.</p> <p>Specific wetlands that meet the Category III criteria include:</p> <ol style="list-style-type: none"> 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. 	<p>Category IV wetlands have the lowest levels of functions and are heavily disturbed.</p> <p>Specific wetlands that meet the Category IV criteria include:</p> <ol style="list-style-type: none"> 1. Wetlands scoring less than 30 points out of 100 on the wetland rating form.
City of DuPont ¹⁰	<p>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.</p>	<p>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.</p>	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 <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Wetland Hydrology Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
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. _____	_____	_____	_____	Dominance Test Worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
50% = _____, 20% = _____	_____	= Total Cover		
Sapling/Shrub Stratum (Plot size: _____)				
1. _____	_____	_____	_____	Prevalence Index worksheet: Total % Cover of: <u> </u> Multiply by: OBL species <u> </u> x1 = <u> </u> FACW species <u> </u> x2 = <u> </u> FAC species <u> </u> x3 = <u> </u> FACU species <u> </u> x4 = <u> </u> UPL species <u> </u> x5 = <u> </u> Column Totals: <u> </u> (A) <u> </u> (B) Prevalence Index = B/A = <u> </u>
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% = _____, 20% = _____ = Total Cover				
Herb Stratum (Plot size: _____)				
1. _____	_____	_____	_____	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 – Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
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. <u>Rubus armeniacus</u>	<u>100</u>	<u>yes</u>	<u>FACU</u>	Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
2. _____	_____	_____	_____	
50% = <u>50</u> , 20% = <u>20</u>	<u>100</u>	= Total Cover		
% Bare Ground in Herb Stratum <u>100</u>				
Remarks:				

Project Site: Point Defiance Bypass

Sampling Point: A-U1

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12+	10YR 3/3	100	---	---	---	---	GSL*	*gravelly sandy loam - embankment fill
---	---	---	---	---	---	---	---	---
---	---	---	---	---	---	---	---	---
---	---	---	---	---	---	---	---	---
---	---	---	---	---	---	---	---	---
---	---	---	---	---	---	---	---	---
---	---	---	---	---	---	---	---	---

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)		
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)		
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)		

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

Restrictive Layer (if present): Type: _____ Depth (inches): _____	Hydric Soils Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
--	--

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (2 or more required)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Water-Stained Leaves (B9)	
<input type="checkbox"/> High Water Table (A2)	(except MLRA 1, 2, 4A, and 4B)	(MLRA 1, 2, 4A, and 4B)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Stunted or Stresses Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)			

Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
---	---

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

Remarks:

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 <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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	Dominance Test Worksheet:	
1. <u>Populus balsamifera</u>	<u>25</u>	<u>yes</u>	<u>FAC</u>	Number of Dominant Species That Are OBL, FACW, or FAC:	<u>4</u> (A)
2. <u>Salix lucida ssp lasiandra</u>	<u>75</u>	<u>yes</u>	<u>FACW</u>	Total Number of Dominant Species Across All Strata:	<u>4</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC:	<u>100</u> (A/B)
4. _____	_____	_____	_____		
50% = <u>50</u> , 20% = <u>20</u>	<u>100</u>	= Total Cover			
Sapling/Shrub Stratum (Plot size: _____)			Prevalence Index worksheet:		
1. _____	_____	_____	Total % Cover of:	Multiply by:	
2. _____	_____	_____	OBL species _____	x1 = _____	
3. _____	_____	_____	FACW species _____	x2 = _____	
4. _____	_____	_____	FAC species _____	x3 = _____	
5. _____	_____	_____	FACU species _____	x4 = _____	
50% = _____, 20% = _____	_____	= Total Cover	UPL species _____	x5 = _____	
Herb Stratum (Plot size: 10 ft x 10 ft)			Column Totals: _____ (A)	_____ (B)	Prevalence Index = B/A = _____
1. <u>Phalaris arundinaceae</u>	<u>60</u>	<u>yes</u>	<u>FACW</u>	Hydrophytic Vegetation Indicators:	
2. <u>Typha latifolia</u>	<u>20</u>	<u>yes</u>	<u>OBL</u>	<input type="checkbox"/> 1 – Rapid Test for Hydrophytic Vegetation	
3. _____	_____	_____	_____	<input checked="" type="checkbox"/> 2 - Dominance Test is >50%	
4. _____	_____	_____	_____	<input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹	
5. _____	_____	_____	_____	<input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)	
6. _____	_____	_____	_____	<input type="checkbox"/> 5 - Wetland Non-Vascular Plants ¹	
7. _____	_____	_____	_____	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)	
8. _____	_____	_____	_____	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
9. _____	_____	_____	_____		
10. _____	_____	_____	_____		
11. _____	_____	_____	_____		
50% = <u>40</u> , 20% = <u>16</u>	<u>80</u>	= Total Cover			
Woody Vine Stratum (Plot size: _____)			Hydrophytic Vegetation Present?		
1. _____	_____	_____	Yes	<input checked="" type="checkbox"/>	No <input type="checkbox"/>
2. _____	_____	_____			
50% = _____, 20% = _____	_____	= Total Cover			
% Bare Ground in Herb Stratum <u>20</u>					
Remarks:					

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

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Depleted Matrix (F3)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)		
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)		
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)		

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

Restrictive Layer (if present): Type: _____ Depth (inches): _____	Hydric Soils Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
--	--

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (2 or more required)	
<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Water-Stained Leaves (B9)	
<input type="checkbox"/> High Water Table (A2)	(except MLRA 1, 2, 4A, and 4B)	(MLRA 1, 2, 4A, and 4B)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input checked="" type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Stunted or Stresses Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)			

Field Observations:		Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____	
Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): 11	
Saturation Present? (includes capillary fringe) Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): 3	

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

Remarks:

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: T18N-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 <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Wetland Hydrology Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: Sample point taken on existing railroad ballast fill prism.			

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: <u>none</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: _____ (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
4. _____	_____	_____	_____	Prevalence Index worksheet:
50% = _____, 20% = _____	_____	= Total Cover		
<u>Sapling/Shrub Stratum</u> (Plot size: <u>none</u>)				OBL species _____ x1 = _____
1. _____	_____	_____	_____	FACW species _____ x2 = _____
2. _____	_____	_____	_____	FAC species _____ x3 = _____
3. _____	_____	_____	_____	FACU species _____ x4 = _____
4. _____	_____	_____	_____	UPL species _____ x5 = _____
5. _____	_____	_____	_____	Column Totals: _____ (A) _____ (B)
50% = _____, 20% = _____	_____	= Total Cover		Prevalence Index = B/A = _____
<u>Herb Stratum</u> (Plot size: <u>none</u>)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 – Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is <3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
50% = _____, 20% = _____	_____	= Total Cover		
<u>Woody Vine Stratum</u> (Plot size: <u>none</u>)				Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
50% = _____, 20% = _____	_____	= Total Cover		
% Bare Ground in Herb Stratum _____				

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

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		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12	*	100	---	---	---	---	rock	ballast rock of railroad fill prism
---	---	---	---	---	---	---	---	---
---	---	---	---	---	---	---	---	---
---	---	---	---	---	---	---	---	---
---	---	---	---	---	---	---	---	---
---	---	---	---	---	---	---	---	---
---	---	---	---	---	---	---	---	---

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8)	Indicators for Problematic Hydric Soils³: <input type="checkbox"/> 2 cm Muck (A10) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
--	---	---

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

Restrictive Layer (if present): Type: _____ Depth (inches): _____	Hydric Soils Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
--	--

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)		Secondary Indicators (2 or more required)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Water-Stained Leaves (B9)	
<input type="checkbox"/> High Water Table (A2)	(except MLRA 1, 2, 4A, and 4B)	(MLRA 1, 2, 4A, and 4B)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Stunted or Stresses Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)			

Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
---	---

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.

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 <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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	Dominance Test Worksheet:	
1. <u><i>Alnus rubra</i></u>	<u>50</u>	<u>yes</u>	<u>FAC</u>	Number of Dominant Species That Are OBL, FACW, or FAC:	<u>3</u> (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata:	<u>4</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC:	<u>75</u> (A/B)
4. _____	_____	_____	_____		
50% = <u>25</u> , 20% = <u>10</u>	<u>50</u>	= Total Cover			
Shrub/Stratum (Plot size: none)			Prevalence Index worksheet:		
1. _____	_____	_____	Total % Cover of: Multiply by:		
2. _____	_____	_____	OBL species	_____	x1 = _____
3. _____	_____	_____	FACW species	_____	x2 = _____
4. _____	_____	_____	FAC species	_____	x3 = _____
5. _____	_____	_____	FACU species	_____	x4 = _____
50% = _____, 20% = _____	_____	= Total Cover		UPL species	_____
			UPL species	_____	x5 = _____
Herb Stratum (Plot size: none)			Column Totals:	_____ (A)	_____ (B)
1. <u><i>Equisetum hymale</i></u>	<u>50</u>	<u>yes</u>	Prevalence Index = B/A = _____		
2. <u><i>Typha latifolia</i></u>	<u>50</u>	<u>yes</u>			
3. _____	_____	_____			
4. _____	_____	_____			
5. _____	_____	_____			
6. _____	_____	_____			
7. _____	_____	_____			
8. _____	_____	_____			
9. _____	_____	_____			
10. _____	_____	_____			
11. _____	_____	_____			
50% = <u>50</u> , 20% = <u>20</u>	<u>100</u>	= Total Cover			
Woody Vine Stratum (Plot size: none)			Hydrophytic Vegetation Indicators:		
1. <u><i>Rubus armeniacus</i></u>	<u>50</u>	<u>yes</u>	<input type="checkbox"/> 1 – Rapid Test for Hydrophytic Vegetation		
2. _____	_____	_____	<input checked="" type="checkbox"/> 2 - Dominance Test is >50%		
50% = <u>25</u> , 20% = <u>10</u>	<u>50</u>	= Total Cover		<input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹	
% Bare Ground in Herb Stratum <u>0</u>			<input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)		
			<input type="checkbox"/> 5 - Wetland Non-Vascular Plants ¹		
			<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)		
			¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.		
			Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/>	No <input checked="" type="checkbox"/>
Remarks:					

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
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.)						Indicators for Problematic Hydric Soils³:		
<input type="checkbox"/> Histosol (A1)			<input type="checkbox"/> Sandy Redox (S5)			<input type="checkbox"/> 2 cm Muck (A10)		
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Stripped Matrix (S6)			<input type="checkbox"/> Red Parent Material (TF2)		
<input type="checkbox"/> Black Histic (A3)			<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)			<input type="checkbox"/> Very Shallow Dark Surface (TF12)		
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Loamy Gleyed Matrix (F2)			<input type="checkbox"/> Other (Explain in Remarks)		
<input type="checkbox"/> Depleted Below Dark Surface (A11)			<input checked="" type="checkbox"/> Depleted Matrix (F3)			³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.		
<input type="checkbox"/> Thick Dark Surface (A12)			<input type="checkbox"/> Redox Dark Surface (F6)					
<input type="checkbox"/> Sandy Mucky Mineral (S1)			<input type="checkbox"/> Depleted Dark Surface (F7)					
<input type="checkbox"/> Sandy Gleyed Matrix (S4)			<input type="checkbox"/> Redox Depressions (F8)					
Restrictive Layer (if present):								
Type: _____								
Depth (inches): _____						Hydric Soils Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Remarks:								

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (2 or more required)	
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Water-Stained Leaves (B9)	
<input checked="" type="checkbox"/> High Water Table (A2)	(except MLRA 1, 2, 4A, and 4B)	(MLRA 1, 2, 4A, and 4B)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Stunted or Stresses Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)			
Field Observations:			
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Water Table Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): 12	
Saturation Present? (includes capillary fringe)	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): 1	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

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 <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Wetland Hydrology Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
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	Dominance Test Worksheet:	
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC:	1 (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata:	2 (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC:	50 (A/B)
4. _____	_____	_____	_____		
50% = _____, 20% = _____	_____	= Total Cover			
Sapling/Shrub Stratum (Plot size: _____)				Prevalence Index worksheet:	
1. _____	_____	_____	_____	Total % Cover of:	Multiply by:
2. _____	_____	_____	_____	OBL species _____	x1 = _____
3. _____	_____	_____	_____	FACW species _____	x2 = _____
4. _____	_____	_____	_____	FAC species _____	x3 = _____
5. _____	_____	_____	_____	FACU species _____	x4 = _____
50% = _____, 20% = _____	_____	= Total Cover		UPL species _____	x5 = _____
Herb Stratum (Plot size: 10 ft x 10 ft)				Column Totals:	_____ (A) _____ (B)
1. <u>Equisetum telmateia</u>	60	yes	FACW	Prevalence Index = B/A = _____	
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
8. _____	_____	_____	_____		
9. _____	_____	_____	_____		
10. _____	_____	_____	_____		
11. _____	_____	_____	_____		
50% = 30, 20% = 12	60	= Total Cover			
Woody Vine Stratum (Plot size: _____)				Hydrophytic Vegetation Indicators:	
1. <u>Rubus armeniacus</u>	20	yes	FACU	<input type="checkbox"/> 1 – Rapid Test for Hydrophytic Vegetation	
2. _____	_____	_____	_____	<input type="checkbox"/> 2 - Dominance Test is >50%	
50% = 10, 20% = 4	20	= Total Cover		<input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹	
% Bare Ground in Herb Stratum 40				<input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)	
				<input type="checkbox"/> 5 - Wetland Non-Vascular Plants ¹	
				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)	
				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
				Hydrophytic Vegetation Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>

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.

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

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8)	Indicators for Problematic Hydric Soils³: <input type="checkbox"/> 2 cm Muck (A10) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
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³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present): Type: _____ Depth (inches): _____	Hydric Soils Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
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Remarks:

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (2 or more required)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Water-Stained Leaves (B9)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> (except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> (MLRA 1, 2, 4A, and 4B)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Stunted or Stresses Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)			

Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

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-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 <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Remarks: <u>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.</u>					

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:																	
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC:	_____ (A)																
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata:	_____ (B)																
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC:	_____ (A/B)																
4. _____	_____	_____	_____																		
50% = _____, 20% = _____	_____	= Total Cover																			
Sapling/Shrub Stratum (Plot size: _____)																					
1. _____	_____	_____	_____	Prevalence Index worksheet: <table style="width: 100%; border: none;"> <tr> <td style="text-align: center;">Total % Cover of:</td> <td style="text-align: center;">Multiply by:</td> </tr> <tr> <td>OBL species _____</td> <td>x1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x2 = _____</td> </tr> <tr> <td>FAC species _____</td> <td>x3 = _____</td> </tr> <tr> <td>FACU species _____</td> <td>x4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x5 = _____</td> </tr> <tr> <td>Column Totals: _____ (A)</td> <td>_____ (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = _____</td> </tr> </table>		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 = _____	
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 = _____																					
2. _____	_____	_____	_____																		
3. _____	_____	_____	_____																		
4. _____	_____	_____	_____																		
5. _____	_____	_____	_____																		
50% = _____, 20% = _____	_____	= Total Cover																			
Herb Stratum (Plot size: 10 ft x 10 ft)																					
1. <u>Phalaris arundinaceae</u>	<u>60</u>	<u>yes</u>	<u>FACW</u>	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> 1 – Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is <3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																	
2. <u>Typha latifolia</u>	<u>40</u>	<u>yes</u>	<u>OBL</u>																		
3. _____	_____	_____	_____																		
4. _____	_____	_____	_____																		
5. _____	_____	_____	_____																		
6. _____	_____	_____	_____																		
7. _____	_____	_____	_____																		
8. _____	_____	_____	_____																		
9. _____	_____	_____	_____																		
10. _____	_____	_____	_____																		
11. _____	_____	_____	_____																		
50% = <u>50</u> , 20% = <u>20</u>	<u>100</u>	= Total Cover																			
Woody Vine Stratum (Plot size: _____)																					
1. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>																	
2. _____	_____	_____	_____																		
50% = _____, 20% = _____	_____	= Total Cover																			
% Bare Ground in Herb Stratum <u>0</u>																					
Remarks:																					

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

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input checked="" type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8)	Indicators for Problematic Hydric Soils³: <input type="checkbox"/> 2 cm Muck (A10) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
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³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present): Type: _____ Depth (inches): _____	Hydric Soils Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
--	--

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (2 or more required)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Water-Stained Leaves (B9)	
<input type="checkbox"/> High Water Table (A2)	(except MLRA 1, 2, 4A, and 4B)	(MLRA 1, 2, 4A, and 4B)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Stunted or Stresses Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)			

Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>12</u> Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>2</u>	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

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-T18N-R1E
 Landform (hillslope, terrace, etc.): fill slope Local relief (concave, convex, none): Slope (%): 30
 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Wetland Hydrology Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
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	Dominance Test Worksheet:	
1. <u><i>Alnus rubra</i></u>	<u>70</u>	<u>yes</u>	<u>FAC</u>	Number of Dominant Species That Are OBL, FACW, or FAC:	<u>2</u> (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata:	<u>3</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC:	<u>67</u> (A/B)
4. _____	_____	_____	_____		
50% = <u>35</u> , 20% = <u>14</u>	<u>70</u>	= Total Cover			
Sapling/Shrub Stratum (Plot size: none)	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet:	
1. <u><i>Rubus spectabilis</i></u>	<u>75</u>	<u>yes</u>	<u>FAC</u>	Total % Cover of:	Multiply by:
2. _____	_____	_____	_____	OBL species _____	x1 = _____
3. _____	_____	_____	_____	FACW species _____	x2 = _____
4. _____	_____	_____	_____	FAC species _____	x3 = _____
5. _____	_____	_____	_____	FACU species _____	x4 = _____
50% = <u>37.5</u> , 20% = <u>15</u>	<u>75</u>	= Total Cover		UPL species _____	x5 = _____
Herb Stratum (Plot size: none)	Absolute % Cover	Dominant Species?	Indicator Status	Column Totals:	<u> </u> (A) <u> </u> (B)
1. <u><i>Polystichum munitum</i></u>	<u>20</u>	<u>yes</u>	<u>FACU</u>	Prevalence Index = B/A = _____	
2. <u><i>Polypodium glycyrrhiza</i></u>	<u>15</u>	<u>no</u>	<u>NL (UPL)</u>		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
8. _____	_____	_____	_____		
9. _____	_____	_____	_____		
10. _____	_____	_____	_____		
11. _____	_____	_____	_____		
50% = <u>17.5</u> , 20% = <u>7</u>	<u>35</u>	= Total Cover			
Woody Vine Stratum (Plot size: none)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators:	
1. _____	_____	_____	_____	<input type="checkbox"/> 1 – Rapid Test for Hydrophytic Vegetation	
2. _____	_____	_____	_____	<input checked="" type="checkbox"/> 2 - Dominance Test is >50%	
				<input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹	
				<input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)	
				<input type="checkbox"/> 5 - Wetland Non-Vascular Plants ¹	
				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)	
¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.					
				Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: * Moss exhibits 100% cover in open areas of the herbaceous layer.					

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

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8)	Indicators for Problematic Hydric Soils³: <input type="checkbox"/> 2 cm Muck (A10) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
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³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present): Type: _____ Depth (inches): _____	Hydric Soils Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
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Remarks:

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (2 or more required)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Water-Stained Leaves (B9)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> (except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> (MLRA 1, 2, 4A, and 4B)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Stunted or Stresses Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)			
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)		Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

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 <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks:			

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: none)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:	
1. <i>Alnus rubra</i>	50	yes	FAC	Number of Dominant Species That Are OBL, FACW, or FAC:	3 (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata:	3 (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC:	100 (A/B)
4. _____	_____	_____	_____		
50% = 25, 20% = 10	50	= Total Cover			
Sapling/Shrub Stratum (Plot size: none)	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet:	
1. <i>Rubus spectabilis</i>	75	yes	FAC	Total % Cover of:	Multiply by:
2. _____	_____	_____	_____	OBL species _____	x1 = _____
3. _____	_____	_____	_____	FACW species _____	x2 = _____
4. _____	_____	_____	_____	FAC species _____	x3 = _____
5. _____	_____	_____	_____	FACU species _____	x4 = _____
50% = 37.5, 20% = 15	75	= Total Cover		UPL species _____	x5 = _____
				Column Totals: _____ (A)	_____ (B)
				Prevalence Index = B/A = _____	
Herb Stratum (Plot size: none)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators:	
1. <i>Pteridium aquilinum</i>	15	no	FACU	<input type="checkbox"/> 1 – Rapid Test for Hydrophytic Vegetation	
2. <i>Tolmiea menziesii</i>	30	yes	FAC	<input checked="" type="checkbox"/> 2 - Dominance Test is >50%	
3. _____	_____	_____	_____	<input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹	
4. _____	_____	_____	_____	<input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)	
5. _____	_____	_____	_____	<input type="checkbox"/> 5 - Wetland Non-Vascular Plants ¹	
6. _____	_____	_____	_____	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)	
7. _____	_____	_____	_____		
8. _____	_____	_____	_____		
9. _____	_____	_____	_____		
10. _____	_____	_____	_____		
11. _____	_____	_____	_____		
50% = 22.5, 20% = 9	45	= Total Cover		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
Woody Vine Stratum (Plot size: none)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Present?	
1. _____	_____	_____	_____	Yes	<input checked="" type="checkbox"/> No <input type="checkbox"/>
2. _____	_____	_____	_____		
50% = _____, 20% = _____	_____	= Total Cover			
% Bare Ground in Herb Stratum 0 *					
Remarks:					

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
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

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils³:	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Depleted Matrix (F3)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)		
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)		
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)		

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

Restrictive Layer (if present):	
Type: _____	
Depth (inches): _____	
Remarks:	

Hydric Soils Present?	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
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HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (2 or more required)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Water-Stained Leaves (B9)	
<input checked="" type="checkbox"/> High Water Table (A2)	(except MLRA 1, 2, 4A, and 4B)	(MLRA 1, 2, 4A, and 4B)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Stunted or Stresses Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)			

Field Observations:			
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____	
Water Table Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): <u>10</u>	
Saturation Present? (includes capillary fringe)	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): <u>0</u>	
Wetland Hydrology Present?		Yes	<input checked="" type="checkbox"/> No <input type="checkbox"/>

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

Remarks:

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. Tozher 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 CHARACTERISTICS 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		Wetland HGM Class used for Rating	
Estuarine		Depressional	<input checked="" type="checkbox"/>
Natural Heritage Wetland		Riverine	
Bog		Lake-fringe	
Mature Forest		Slope	
Old Growth Forest		Flats	
Coastal Lagoon		Freshwater Tidal	
Interdunal			
None of the above	<input checked="" type="checkbox"/>	Check if unit has multiple HGM classes present	<input type="checkbox"/>

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.		<input checked="" type="checkbox"/>
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).		<input checked="" type="checkbox"/>
SP3. Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?		<input checked="" type="checkbox"/>
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.		<input checked="" type="checkbox"/>

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 name or number _____

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

Comments:

H 2 Does the wetland have the <u>opportunity</u> to provide habitat for many species?	(only 1 score per box)
<p>H 2.1 <u>Buffers</u> (see P. 80): <i>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”.</i></p> <p>___ 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</p> <p>___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference..... points = 4</p> <p>___ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference..... points = 4</p> <p>___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference..... points = 3</p> <p>___ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference points = 3</p> <p>If buffer does not meet any of the criteria above:</p> <p>___ 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</p> <p>___ No paved areas of buildings within 50m of wetland for > 50% circumference. Light to moderate grazing or lawns are OK..... points = 2</p> <p>___ Heavy grazing in buffer points = 1</p> <p>___ 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</p> <p>___ Buffer does not meet any of the criteria above points = 1</p> <p style="text-align: right;">Arial photo showing buffers</p>	<p>Figure ___</p> <p style="text-align: right;"> </p>
<p>H 2.2 <u>Corridors and Connections</u> (see p. 81)</p> <p>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? <i>(Dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor).</i></p> <p style="text-align: center;">YES = 4 points (go to H 2.3) NO = go to H 2.2.2</p> <p>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?</p> <p style="text-align: center;">YES = 2 points (go to H 2.3) NO = go to H 2.2.3</p> <p>H. 2.2.3 Is the wetland:</p> <ul style="list-style-type: none"> • 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? <p style="text-align: right;">YES = 1 point NO = 0 points</p>	<p style="text-align: right;"> </p>

Comments:

Wetland name or number A

	<p>H 2.3 <u>Near or adjacent to other priority habitats listed by WDFW</u> (see p. 82): Which of the following priority habitats are within 330 ft. (100m) of the wetland? <i>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.</i></p> <p><input type="checkbox"/> Riparian: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.</p> <p><input type="checkbox"/> Aspen Stands: Pure or mixed stands of aspen greater than 0.8 ha (2 acres)</p> <p><input type="checkbox"/> Cliffs: Greater than 7.6m (25 ft) high and occurring below 5000 ft.</p> <p><input type="checkbox"/> 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) > 81 cm (32 in) dbh or > 200 years of age.</p> <p><input type="checkbox"/> 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.</p> <p><input type="checkbox"/> Prairies: Relatively undisturbed areas (as indicated by dominance of native plants) where greases and/or forbs form the natural climax plant community.</p> <p><input type="checkbox"/> 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.</p> <p><input type="checkbox"/> Caves: A naturally occurring cavity, recess, void, or system of interconnected passages.</p> <p><input type="checkbox"/> Oregon white Oak: Woodlands stands of pure oak or oak/conifer associations where canopy coverage of the oak component of the stand is 25%.</p> <p><input type="checkbox"/> 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 <i>priority habitats</i>, 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.</p> <p><input type="checkbox"/> 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.</p> <p><input type="checkbox"/> 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).</p> <p>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).</p>	<p>0</p>
	<p>H 2.4 <u>Wetland Landscape:</u> <i>Choose the one description of the landscape around the wetland that best fits (see p. 84)</i></p> <ul style="list-style-type: none"> • 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 	<p>3</p>
	<p>H 2 TOTAL Score – opportunity for providing habitat <i>Add the scores from H2.1, H2.2, H2.3, H2.4</i></p>	<p>5</p>
	<p><i>TOTAL for H 1 from page 8</i></p>	<p>9</p>
◆	<p>Total Score for Habitat Functions Add the points for H 1 and H 2; then <i>record the result on p. 1</i></p>	<p>9</p>

Comments:

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.	
<p>SC1 <u>Estuarine wetlands?</u> (see p.86)</p> <p>Does the wetland unit meet the following criteria for Estuarine wetlands?</p> <p><input type="checkbox"/> The dominant water regime is tidal, <input type="checkbox"/> Vegetated, and <input type="checkbox"/> With a salinity greater than 0.5 ppt.</p> <p>YES = Go to SC 1.1 NO <input checked="" type="checkbox"/></p>	
<p>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</p>	Cat. I
<p>SC 1.2 Is the wetland at least 1 acre in size and meets at least two of the following conditions?</p> <p>YES = Category I NO = Category II</p> <p><input type="checkbox"/> 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 <i>Spartina</i> 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 <i>Spartina</i> 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 <i>Spartina</i> in determining the size threshold of 1 acre.</p> <p><input type="checkbox"/> 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</p> <p><input type="checkbox"/> The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.</p>	Cat. I Cat. II Dual Rating I/II
<p>SC2 <u>Natural Heritage Wetlands</u> (see p. 87)</p> <p>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.</p> <p>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.)</p> <p>S/T/R information from Appendix D <input checked="" type="checkbox"/> or accessed from WNHP/DNR web site <input checked="" type="checkbox"/></p> <p>YES <input type="checkbox"/> Contact WNHP/DNR (see p. 79) and go to SC 2.2 NO <input checked="" type="checkbox"/></p> <p>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?</p> <p>YES = Category I NO <input checked="" type="checkbox"/> not a Heritage Wetland</p>	Cat I
<p>SC3 <u>Bogs</u> (see p. 87)</p> <p>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. <i>If you answer yes you will still need to rate the wetland based on its function.</i></p> <ol style="list-style-type: none"> 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 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 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)? <p>YES = Is a bog for purpose of rating NO = go to question 4</p> <p>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.</p> <ol style="list-style-type: none"> 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)? <p>YES = Category I NO = Is not a bog for purpose of rating</p>	Cat. I

Wetland name or number _____

SC4	<p>Forested Wetlands (see p. 90)</p> <p>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? <i>If you answer yes you will still need to rate the wetland based on its function.</i></p> <p>___ 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).</p> <p>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.</p> <p>___ 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.</p> <p>YES = Category I NO = <input checked="" type="checkbox"/> not a forested wetland with special characteristics</p>	Cat. I
SC5	<p>Wetlands in Coastal Lagoons (see p. 91)</p> <p>Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?</p> <p>___ 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.</p> <p>___ 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 (<i>needs to be measured near the bottom.</i>)</p> <p>YES = Go to SC 5.1 NO <input checked="" type="checkbox"/> not a wetland in a coastal lagoon</p> <p>SC 5.1 Does the wetland meet all of the following three conditions?</p> <p>___ 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).</p> <p>___ 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.</p> <p>___ The wetland is larger than 1/10 acre (4350 square ft.)</p> <p>YES = Category I NO = Category II</p>	Cat. I Cat. II
SC6	<p>Interdunal Wetlands (see p. 93)</p> <p>Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)?</p> <p>YES = Go to SC 6.1 NO <input checked="" type="checkbox"/> not an interdunal wetland for rating</p> <p><i>If you answer yes you will still need to rate the wetland based on its functions.</i></p> <p>In practical terms that means the following geographic areas:</p> <ul style="list-style-type: none"> • 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 <p>SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is one acre or larger?</p> <p>YES = Category II NO = go to SC 6.2</p> <p>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?</p> <p>YES = Category III</p>	Cat. II Cat. III
◆	<p>Category of wetland based on Special Characteristics</p> <p>Choose the "highest" rating if wetland falls into several categories, and record on p. 1.</p> <p>If you answered NO for all types enter "Not Applicable" on p. 1</p>	NA

Comments:

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. Toghiani 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
 Map of wetland unit: Figure _____ Estimated size 0.1
federal reservoir area - this is not consistent in these areas

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
 Score for Hydrologic Functions
 Score for Habitat Functions
 TOTAL Score for Functions

20
22
6
48

Category based on SPECIAL CHARACTERISTICS 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 <input checked="" type="checkbox"/>
Bog	Lake-fringe
Mature Forest	Slope
Old Growth Forest	Flats
Coastal Lagoon	Freshwater Tidal
Interdunal	
None of the above <input checked="" type="checkbox"/>	Check if unit has multiple HGM classes present <input type="checkbox"/>

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. <i>Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered animal or plant species (T/E species)?</i> For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		
SP2. <i>Has the wetland unit been documented as habitat for any State listed Threatened or Endangered animal species?</i> 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. <i>Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?</i>		
SP4. <i>Does the wetland unit have a local significance in addition to its functions?</i> 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 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


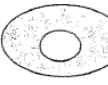

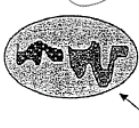

If you are unable still to determine which of the above criteria apply to your wetland, or you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.

Wetland name or number E

R Riverine and Freshwater Tidal Fringe Wetlands		Points
WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.		(only 1 score per box)
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: <ul style="list-style-type: none"> • 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 <u>4</u>
R 1.2	Characteristics of the vegetation in the unit (areas with >90% cover at person height): <ul style="list-style-type: none"> • 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 	Figure <u>6</u>
Aerial photo or map showing polygons of different vegetation types		
Add the points in the boxes above		<u>10</u>
R 2	Does the wetland have the opportunity to improve water quality? (see p. 53) 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. <input type="checkbox"/> Grazing in the wetland or within 150 ft <input type="checkbox"/> Untreated stormwater discharges to wetland <input checked="" type="checkbox"/> Tilled fields or orchards within 150 ft. of wetland <input checked="" type="checkbox"/> A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging <input type="checkbox"/> Residential, urban areas, golf courses are within 150 ft. of wetland <input type="checkbox"/> 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. <input type="checkbox"/> Other _____ YES multiplier is 2 NO multiplier is 1	Multiplier <u>2</u>
◆ TOTAL – Water Quality Functions Multiply the score from R1 by R2; then add score to table on p. 1		<u>20</u>
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). <ul style="list-style-type: none"> • 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 	Figure <u>4</u>
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): <ul style="list-style-type: none"> • 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 	Figure <u>7</u>
Aerial photo or map showing polygons of different vegetation types		
Add the points in the boxes above		<u>11</u>
R 4	Does the wetland have the opportunity to reduce flooding and erosion? (see p.57) 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. <input checked="" type="checkbox"/> There are human structures and activities downstream (roads, buildings, bridges, farms) that can be damaged by flooding. <input type="checkbox"/> There are natural resources downstream (e.g. salmon redds) that can be damaged by flooding <input type="checkbox"/> 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	Multiplier <u>2</u>
◆ TOTAL – Hydrologic Functions Multiply the score from R3 by R4; then add score to table on p. 1		<u>22</u>

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	<p><u>Vegetation structure</u> (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.</p> <p><input checked="" type="checkbox"/> Aquatic Bed <input type="checkbox"/> Emergent plants <input type="checkbox"/> Scrub/shrub (areas where shrubs have > 30% cover) <input type="checkbox"/> Forested (areas where trees have > 30% cover)</p> <p>If the unit has a forested class check if: <input type="checkbox"/> 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:</p> <table border="0"> <tr> <td>3 structures.....</td> <td>points = 2</td> <td rowspan="3">Map of Cowardin vegetation classes</td> </tr> <tr> <td>4 structures or more.....</td> <td>points = 4</td> </tr> <tr> <td>2 structures.....</td> <td>points = 1</td> </tr> </table>	3 structures.....	points = 2	Map of Cowardin vegetation classes	4 structures or more.....	points = 4	2 structures.....	points = 1	Figure <u>0</u>					
3 structures.....	points = 2	Map of Cowardin vegetation classes												
4 structures or more.....	points = 4													
2 structures.....	points = 1													
H 1.2	<p><u>Hydroperiods</u> (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).</p> <table border="0"> <tr> <td><input type="checkbox"/> Permanently flooded or inundated</td> <td>4 or more types present</td> <td>points = 3</td> </tr> <tr> <td><input checked="" type="checkbox"/> Seasonally flooded or inundated</td> <td>3 or more types present.....</td> <td>points = 2</td> </tr> <tr> <td><input type="checkbox"/> Occasionally flooded or inundated</td> <td>2 types present.....</td> <td>points = 1</td> </tr> <tr> <td><input type="checkbox"/> Saturated only</td> <td>1 type present.....</td> <td>points = 0</td> </tr> </table> <p><input type="checkbox"/> Permanently flowing stream or river in, or adjacent to, the wetland <input type="checkbox"/> Seasonally flowing stream in, or adjacent to, the wetland <input type="checkbox"/> Lake-fringe wetland..... = 2 points <input type="checkbox"/> Freshwater tidal wetland..... = 2 points</p> <p style="text-align: right;">Map of hydroperiods</p>	<input type="checkbox"/> Permanently flooded or inundated	4 or more types present	points = 3	<input checked="" type="checkbox"/> Seasonally flooded or inundated	3 or more types present.....	points = 2	<input type="checkbox"/> Occasionally flooded or inundated	2 types present.....	points = 1	<input type="checkbox"/> Saturated only	1 type present.....	points = 0	Figure <u>1</u>
<input type="checkbox"/> Permanently flooded or inundated	4 or more types present	points = 3												
<input checked="" type="checkbox"/> Seasonally flooded or inundated	3 or more types present.....	points = 2												
<input type="checkbox"/> Occasionally flooded or inundated	2 types present.....	points = 1												
<input type="checkbox"/> Saturated only	1 type present.....	points = 0												
H 1.3	<p><u>Richness of Plant Species</u> (see p. 75): Count the number of plant species in the wetland that cover at least 10 ft² (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.</p> <p>If you counted: > 19 species points = 2 5 – 19 species points = 1 5 species points = 0</p> <p>List species below if you want to: <u>Phar, Tula</u></p>	<u>0</u>												
H 1.4	<p><u>Interspersion of Habitats</u> (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.</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  None = 0 points </div> <div style="text-align: center;">  Low = 1 point </div> <div style="text-align: center;">  Moderate = 2 points </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 20px;"> <div style="text-align: center;">  High = 3 points </div> <div style="text-align: center;">  [riparian braided channels] </div> </div> <p>Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always "high".</p> <p style="text-align: center;">Use map of Cowardin classes.</p>	Figure <u>0</u>												
H 1.5	<p><u>Special Habitat Features</u> (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.</p> <p><input type="checkbox"/> Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft. long) <input type="checkbox"/> Standing snags (diameter at the bottom > 4 inches) in the wetland <input type="checkbox"/> 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) <input type="checkbox"/> 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) <input type="checkbox"/> 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) <input type="checkbox"/> Invasive plants cover less than 25% of the wetland area in each stratum of plants</p> <p>NOTE: The 20% stated in early printings of the manual on page 78 is an error.</p>	<u>0</u>												
H 1 TOTAL Score – potential for providing habitat		1												

H 2	Does the wetland have the <u>opportunity</u> to provide habitat for many species?	(only 1 score per box)
	<p>H 2.1 <u>Buffers</u> (see P. 80): <i>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".</i></p> <p><input type="checkbox"/> 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</p> <p><input type="checkbox"/> 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference..... points = 4</p> <p><input type="checkbox"/> 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference..... points = 4</p> <p><input type="checkbox"/> 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference..... points = 3</p> <p><input type="checkbox"/> 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference points = 3</p> <p>If buffer does not meet any of the criteria above:</p> <p><input type="checkbox"/> 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</p> <p><input type="checkbox"/> No paved areas of buildings within 50m of wetland for > 50% circumference. Light to moderate grazing or lawns are OK..... points = 2</p> <p><input type="checkbox"/> Heavy grazing in buffer points = 1</p> <p><input type="checkbox"/> 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</p> <p><input checked="" type="checkbox"/> Buffer does not meet any of the criteria above points = 1</p> <p style="text-align: right;">Arial photo showing buffers</p>	<p>Figure <u> </u></p> <p style="text-align: right;">/</p>
	<p>H 2.2 <u>Corridors and Connections</u> (see p. 81)</p> <p>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? (<i>Dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor</i>).</p> <p style="text-align: center;">YES = 4 points (go to H 2.3) NO = go to H 2.2.2</p> <p>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?</p> <p style="text-align: center;">YES = 2 points (go to H 2.3) NO = go to H 2.2.3</p> <p>H. 2.2.3 Is the wetland:</p> <ul style="list-style-type: none"> • 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? <p style="text-align: right;">YES = 1 point NO = 0 points</p>	<p style="text-align: right;">/</p>

Comments:

Wetland name or number E

	<p>H 2.3 <u>Near or adjacent to other priority habitats listed by WDFW</u> (see p. 82): Which of the following priority habitats are within 330 ft. (100m) of the wetland? <i>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.</i></p> <p><input type="checkbox"/> Riparian: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.</p> <p><input type="checkbox"/> Aspen Stands: Pure or mixed stands of aspen greater than 0.8 ha (2 acres)</p> <p><input type="checkbox"/> Cliffs: Greater than 7.6m (25 ft) high and occurring below 5000 ft.</p> <p><input type="checkbox"/> 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.</p> <p><input type="checkbox"/> 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.</p> <p><input type="checkbox"/> Prairies: Relatively undisturbed areas (as indicated by dominance of native plants) where greases and/or forbs form the natural climax plant community.</p> <p><input type="checkbox"/> 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.</p> <p><input type="checkbox"/> Caves: A naturally occurring cavity, recess, void, or system of interconnected passages.</p> <p><input checked="" type="checkbox"/> Oregon white Oak: Woodlands stands of pure oak or oak/conifer associations where canopy coverage of the oak component of the stand is 25%.</p> <p><input type="checkbox"/> 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 <i>priority habitats</i>, 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.</p> <p><input type="checkbox"/> 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.</p> <p><input type="checkbox"/> 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).</p> <p>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).</p>	
	<p>H 2.4 <u>Wetland Landscape:</u> <i>Choose the one description of the landscape around the wetland that best fits (see p. 84)</i></p> <ul style="list-style-type: none"> • 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 milepoints = 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 milepoints = 2 • There are no wetlands within 1/2 milepoints = 0 	<p style="text-align: right;">2</p>
<p>H 2 TOTAL Score – opportunity for providing habitat Add the scores from H2.1, H2.2, H2.3, H2.4</p>		<p style="text-align: right;">5</p>
<p style="text-align: right;"><i>TOTAL for H 1 from page 8</i></p>		<p style="text-align: right;">1</p>
<p>◆ Total Score for Habitat Functions Add the points for H 1 and H 2; then record the result on p. 1</p>		<p style="text-align: right;">C</p>

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	<p>Estuarine wetlands? (see p.86)</p> <p>Does the wetland unit meet the following criteria for Estuarine wetlands?</p> <p><input type="checkbox"/> The dominant water regime is tidal,</p> <p><input type="checkbox"/> Vegetated, and</p> <p><input type="checkbox"/> With a salinity greater than 0.5 ppt.</p> <p>YES = Go to SC 1.1 NO = <u>NO</u></p>
	<p>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. I</p>
	<p>SC 1.2 Is the wetland at least 1 acre in size and meets at least two of the following conditions?</p> <p>YES = Category I NO = Category II</p> <p><input type="checkbox"/> 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 <i>Spartina</i> 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 <i>Spartina</i> 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 <i>Spartina</i> in determining the size threshold of 1 acre.</p> <p><input type="checkbox"/> 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</p> <p><input type="checkbox"/> The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.</p> <p>Cat. I Cat. II Dual Rating I/II</p>
SC2	<p>Natural Heritage Wetlands (see p. 87)</p> <p>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.</p> <p>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 <input checked="" type="checkbox"/> or accessed from WNHP/DNR web site <input type="checkbox"/> YES <input checked="" type="checkbox"/> Contact WNHP/DNR (see p. 79) and go to SC 2.2 NO <input type="checkbox"/></p> <p>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 <input type="checkbox"/> not a Heritage Wetland Cat I</p>
SC3	<p>Bogs (see p. 87)</p> <p>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. <i>If you answer yes you will still need to rate the wetland based on its function.</i></p> <p>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</p> <p>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</p> <p>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</p> <p>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.</p> <p>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</p>

Wetland name or number _____

SC4	<p>Forested Wetlands (see p. 90)</p> <p>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? <i>If you answer yes you will still need to rate the wetland based on its function.</i></p> <p>___ 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).</p> <p>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.</p> <p>___ 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.</p> <p>YES = Category I NO = <input checked="" type="checkbox"/> not a forested wetland with special characteristics</p>	Cat. I
SC5	<p>Wetlands in Coastal Lagoons (see p. 91)</p> <p>Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?</p> <p>___ 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.</p> <p>___ 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 (<i>needs to be measured near the bottom.</i>)</p> <p>YES = Go to SC 5.1 NO <input checked="" type="checkbox"/> not a wetland in a coastal lagoon</p> <p>SC 5.1 Does the wetland meet all of the following three conditions?</p> <p>___ 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).</p> <p>___ 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.</p> <p>___ The wetland is larger than 1/10 acre (4350 square ft.)</p> <p>YES = Category I NO = Category II</p>	Cat. I Cat. II
SC6	<p>Interdunal Wetlands (see p. 93)</p> <p>Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)?</p> <p>YES = Go to SC 6.1 NO <input checked="" type="checkbox"/> not an interdunal wetland for rating</p> <p><i>If you answer yes you will still need to rate the wetland based on its functions.</i></p> <p>In practical terms that means the following geographic areas:</p> <ul style="list-style-type: none"> • 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 <p>SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is one acre or larger?</p> <p>YES = Category II NO = go to SC 6.2</p> <p>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?</p> <p>YES = Category III</p>	Cat. II Cat. III
◆	<p>Category of wetland based on Special Characteristics</p> <p>Choose the "highest" rating if wetland falls into several categories, and record on p. 1.</p> <p>If you answered NO for all types enter "Not Applicable" on p. 1</p>	

Comments:

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: 12/12/08

Rated by: P. T. Sgher Trained by Ecology? Yes No Date of training: 2005

SEC: 3 TWSNHP: 130N RNGE: 1B 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
Category II =	Score 51 - 69
Category III =	Score 30 - 50
Category IV =	Score < 30

Score for Water Quality Functions	5
Score for Hydrologic Functions	6
Score for Habitat Functions	12
TOTAL Score for Functions	23

Category based on SPECIAL CHARACTERISTICS 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 <input checked="" type="checkbox"/>
Old Growth Forest	Flats
Coastal Lagoon	Freshwater Tidal
Interdunal	
None of the above <input checked="" type="checkbox"/>	Check if unit has multiple HGM classes present <input type="checkbox"/>

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.		<input checked="" type="checkbox"/>
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).		<input checked="" type="checkbox"/>
SP3. Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?		<input checked="" type="checkbox"/>
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.		<input checked="" type="checkbox"/>

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 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 _____

S Slope Wetlands		Points
WATER QUALITY FUNCTIONS - Indicators that wetland functions to improve water quality.		(only 1 score per box) (see p. 64)
S 1	Does the wetland have the <u>potential</u> 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 <u>opportunity</u> to improve water quality?	(see p. 67)
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		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 <u>potential</u> 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 <u>opportunity</u> to reduce flooding and erosion?	(see p. 70)
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		Multiplier 1
TOTAL - Hydrologic Functions Multiply the score from S3 by S4; then add score to table on p. 1		6

Comments:

Wetland name or number C

H 2	Does the wetland have the opportunity to provide habitat for many species?	(only 1 score per box)
	<p>H 2.1 <u>Buffers</u> (see P. 80): <i>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".</i></p> <p><input type="checkbox"/> 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</p> <p><input checked="" type="checkbox"/> 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference.....points = 4</p> <p><input type="checkbox"/> 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference.....points = 4</p> <p><input type="checkbox"/> 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference.....points = 3</p> <p><input type="checkbox"/> 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumferencepoints = 3</p> <p>If buffer does not meet any of the criteria above:</p> <p><input type="checkbox"/> 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</p> <p><input type="checkbox"/> No paved areas of buildings within 50m of wetland for > 50% circumference.....points = 2</p> <p><input type="checkbox"/> Light to moderate grazing or lawns are OK.....points = 2</p> <p><input type="checkbox"/> Heavy grazing in bufferpoints = 1</p> <p><input type="checkbox"/> 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</p> <p><input type="checkbox"/> Buffer does not meet any of the criteria abovepoints = 1</p> <p style="text-align: right;">Aerial photo showing buffers</p>	<p>Figure _____</p> <p style="text-align: center; font-size: 2em;">4</p>
	<p>H 2.2 <u>Corridors and Connections</u> (see p. 81)</p> <p>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? (<i>Dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor.</i>)</p> <p style="text-align: center;">YES = 4 points (go to H 2.3) NO = go to H 2.2.2</p> <p>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?</p> <p style="text-align: center;">YES = 2 points (go to H 2.3) NO = go to H 2.2.3</p> <p>H. 2.2.3 Is the wetland:</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Within 5 mi (8km) of a brackish or salt water estuary OR <input type="checkbox"/> Within 3 miles of a large field or pasture (> 40 acres) OR YES = 1 point <input type="checkbox"/> Within 1 mile of a lake greater than 20 acres? NO = 0 points 	<p style="text-align: center; font-size: 2em;">2</p>

Comments:

Wetland name or number C

H 2.3	<p>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: <i>the connections do not have to be relatively undisturbed. These are DFW definitions. Check with your local DFW biologist if there are any questions.</i></p> <p><input type="checkbox"/> Riparian: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.</p> <p><input type="checkbox"/> Aspen Stands: Pure or mixed stands of aspen greater than 0.8 ha (2 acres)</p> <p><input type="checkbox"/> Cliffs: Greater than 7.6m (25 ft) high and occurring below 5000 ft.</p> <p><input type="checkbox"/> 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.</p> <p><input checked="" type="checkbox"/> 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.</p> <p><input type="checkbox"/> Prairies: Relatively undisturbed areas (as indicated by dominance of native plants) where grasses and/or forbs form the natural climax plant community.</p> <p><input type="checkbox"/> 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.</p> <p><input type="checkbox"/> Caves: A naturally occurring cavity, recess, void, or system of interconnected passages.</p> <p><input type="checkbox"/> Oregon white Oak: Woodlands stands of pure oak or oak/conifer associations where canopy coverage of the oak component of the stand is 25%.</p> <p><input type="checkbox"/> 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 <i>priority habitats</i>, 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.</p> <p><input checked="" type="checkbox"/> 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.</p> <p><input type="checkbox"/> 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).</p> <p>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).</p>	
H 2.4	<p>Wetland Landscape: Choose the one description of the landscape around the wetland that best fits (see p. 84)</p> <ul style="list-style-type: none"> • 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 milepoints = 5 • There are at least 3 other wetlands within 1/2 mile, BUT the connections between them are disturbedpoints = <u>3</u> • The wetland fringe on a lake with disturbance and there are 3 other lake-fringe wetlands within 1/2 milepoints = 3 • There is at least 1 wetland within 1/2 milepoints = 2 • There are no wetlands within 1/2 milepoints = 0 <p style="text-align: right;">3</p>	
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
Total Score for Habitat Functions Add the points for H 1 and H 2; then record the result on p. 1		12

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? <input type="checkbox"/> The dominant water regime is tidal, <input type="checkbox"/> Vegetated, and <input type="checkbox"/> With a salinity greater than 0.5 ppt. YES = Go to SC 1.1 NO <input checked="" type="checkbox"/>	
	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. I
	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 <input type="checkbox"/> 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 <i>Spartina</i> 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 <i>Spartina</i> 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 <i>Spartina</i> in determining the size threshold of 1 acre. <input type="checkbox"/> 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 <input type="checkbox"/> 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 <input checked="" type="checkbox"/> or accessed from WNHP/DNR web site <input checked="" type="checkbox"/> YES <input type="checkbox"/> Contact WNHP/DNR (see p. 79) and go to SC 2.2 NO <input checked="" type="checkbox"/> 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 <input type="checkbox"/> 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. <i>If you answer yes you will still need to rate the wetland based on its function.</i> 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

Wetland name or number C

SC4	<p>Forested Wetlands (see p. 90)</p> <p>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? <i>If you answer yes you will still need to rate the wetland based on its function.</i></p> <p>___ 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).</p> <p>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.</p> <p>___ 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.</p> <p>YES = Category I NO = <input checked="" type="checkbox"/> not a forested wetland with special characteristics</p>	Cat. I
SC5	<p>Wetlands in Coastal Lagoons (see p. 91)</p> <p>Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?</p> <p>___ 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.</p> <p>___ 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 (<i>needs to be measured near the bottom.</i>)</p> <p>YES = Go to SC 5.1 NO <input checked="" type="checkbox"/> not a wetland in a coastal lagoon</p> <p>SC 5.1 Does the wetland meet all of the following three conditions?</p> <p>___ 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).</p> <p>___ 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.</p> <p>___ The wetland is larger than 1/10 acre (4350 square ft.)</p> <p>YES = Category I NO = Category II</p>	Cat. I Cat. II
SC6	<p>Interdunal Wetlands (see p. 93)</p> <p>Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)?</p> <p>YES = Go to SC 6.1 NO <input checked="" type="checkbox"/> not an interdunal wetland for rating</p> <p><i>If you answer yes you will still need to rate the wetland based on its functions.</i></p> <p>In practical terms that means the following geographic areas:</p> <ul style="list-style-type: none"> • 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 <p>SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is one acre or larger?</p> <p>YES = Category II NO = go to SC 6.2</p> <p>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?</p> <p>YES = Category III</p>	Cat. II Cat. III
◆	<p>Category of wetland based on Special Characteristics</p> <p><i>Choose the "highest" rating if wetland falls into several categories, and record on p. 1.</i></p> <p>If you answered NO for all types enter "Not Applicable" on p. 1</p>	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. Toghiani Trained by Ecology? Yes No Date of training: 2008

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	Score for Water Quality Functions	<u>3</u>
Category II = Score 51 - 69	Score for Hydrologic Functions	<u>16</u>
Category III = Score 30 - 50	Score for Habitat Functions	<u>16</u>
Category IV = Score < 30	TOTAL Score for Functions	<u>35</u>

Category based on SPECIAL CHARACTERISTICS 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	Wetland HGM Class used for Rating
Estuarine	Depressional <input checked="" type="checkbox"/>
Natural Heritage Wetland	Riverine
Bog	Lake-fringe
Mature Forest	Slope <input checked="" type="checkbox"/>
Old Growth Forest	Flats
Coastal Lagoon	Freshwater Tidal
Interdunal	
None of the above <input checked="" type="checkbox"/>	Check if unit has multiple HGM classes present <input type="checkbox"/>

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.		<u>✓</u>
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 I Natural Heritage Wetlands (see p. 19 of data form).		<u>✓</u>
SP3. Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?		<u>✓</u>
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.		<u>✓</u>

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 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 called 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 A6

S Stone Wetlands		Points
WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.		(Only 1 score per box) (see p.64)
S 1	Does the wetland have the potential to improve water quality?	
S 1.1	Characteristics of average slope of unit: <ul style="list-style-type: none"> 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 <u>clay</u> 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. <ul style="list-style-type: none"> 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. <input type="checkbox"/> Grazing in the wetland or within 150 ft <input type="checkbox"/> Untreated stormwater discharges to wetland <input type="checkbox"/> Tilled fields, logging, or orchards within 150 ft. of wetland <input type="checkbox"/> Residential, urban areas, or golf courses are within 150 ft. upslope of wetland <input type="checkbox"/> 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). <ul style="list-style-type: none"> 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. <input checked="" type="checkbox"/> Wetland has surface runoff that drains to a river or stream that has flooding problems <input type="checkbox"/> 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:

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	<p>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.</p> <p><input type="checkbox"/> Aquatic Bed <input type="checkbox"/> Emergent plants <input checked="" type="checkbox"/> Scrub/shrub (areas where shrubs have > 30% cover) <input checked="" type="checkbox"/> Forested (areas where trees have > 30% cover) If the unit has a forested class check if: <input type="checkbox"/> 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:</p> <p style="text-align: right;">Map of Cowardin vegetation classes</p> <table style="width: 100%;"> <tr> <td>4 structures or more.....</td> <td>points = 4</td> <td>3 structures.....</td> <td>points = 2</td> </tr> <tr> <td>2 structures.....</td> <td>points = 1</td> <td>1 structure.....</td> <td>points = 0</td> </tr> </table>	4 structures or more.....	points = 4	3 structures.....	points = 2	2 structures.....	points = 1	1 structure.....	points = 0	Figure <u>0</u>
4 structures or more.....	points = 4	3 structures.....	points = 2							
2 structures.....	points = 1	1 structure.....	points = 0							
H 1.2	<p>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).</p> <p><input checked="" type="checkbox"/> Permanently flooded or inundated <input checked="" type="checkbox"/> Seasonally flooded or inundated <input checked="" type="checkbox"/> Occasionally flooded or inundated <input checked="" type="checkbox"/> Saturated only <input checked="" type="checkbox"/> Permanently flowing stream or river in, or adjacent to, the wetland <input checked="" type="checkbox"/> Seasonally flowing stream in, or adjacent to, the wetland <input type="checkbox"/> Lake-fringe wetland..... = 2 points <input type="checkbox"/> Freshwater tidal wetland..... = 2 points</p> <p style="text-align: right;">Map of hydroperiods</p> <table style="width: 100%;"> <tr> <td>4 or more types present</td> <td>points = 3</td> </tr> <tr> <td>3 or more types present.....</td> <td>points = 2</td> </tr> <tr> <td>2 types present.....</td> <td>points = 1</td> </tr> <tr> <td>1 type present.....</td> <td>points = 0</td> </tr> </table>	4 or more types present	points = 3	3 or more types present.....	points = 2	2 types present.....	points = 1	1 type present.....	points = 0	Figure <u>2</u>
4 or more types present	points = 3									
3 or more types present.....	points = 2									
2 types present.....	points = 1									
1 type present.....	points = 0									
H 1.3	<p>Richness of Plant Species (see p. 75): Count the number of plant species in the wetland that cover at least 10 ft² (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:</p> <table style="width: 100%;"> <tr> <td>> 19 species.....</td> <td>points = 2</td> </tr> <tr> <td>5 - 19 species.....</td> <td>points = 1</td> </tr> <tr> <td>< 5 species.....</td> <td>points = 0</td> </tr> </table> <p>List species below if you want to:</p> <hr/> <hr/> <hr/>	> 19 species.....	points = 2	5 - 19 species.....	points = 1	< 5 species.....	points = 0	<u>1</u>		
> 19 species.....	points = 2									
5 - 19 species.....	points = 1									
< 5 species.....	points = 0									
H 1.4	<p>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.</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> None = 0 points </div> <div style="text-align: center;"> Low = 1 point </div> <div style="text-align: center;"> Moderate = 2 points </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="text-align: center;"> High = 3 points </div> <div style="text-align: center;"> [riparian braided channels] </div> </div> <p style="text-align: right;">Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always "high".</p> <p style="text-align: center;">Use map of Cowardin classes.</p>	Figure <u>0</u>								
H 1.5	<p>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.</p> <p><input checked="" type="checkbox"/> Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft. long) <input checked="" type="checkbox"/> Standing snags (diameter at the bottom > 4 inches) in the wetland <input type="checkbox"/> 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) <input type="checkbox"/> 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) <input checked="" type="checkbox"/> 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) <input type="checkbox"/> 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.</p>	<u>3</u>								
H 1 TOTAL Score – potential for providing habitat		<u>6</u>								

Wetland name or number AB

H 2	Does the wetland have the <u>opportunity</u> to provide habitat for many species?	(only 1 score per box)
	<p>H 2.1 <u>Buffers</u> (see P. 80): <i>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".</i></p> <ul style="list-style-type: none"> <input type="checkbox"/> 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 <input checked="" type="checkbox"/> 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference..... points = 4 <input type="checkbox"/> 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference..... points = 4 <input type="checkbox"/> 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference..... points = 3 <input type="checkbox"/> 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference points = 3 <p>If buffer does not meet any of the criteria above:</p> <ul style="list-style-type: none"> <input type="checkbox"/> 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 <input type="checkbox"/> No paved areas of buildings within 50m of wetland for > 50% circumference. Light to moderate grazing or lawns are OK..... points = 2 <input type="checkbox"/> Heavy grazing in buffer..... points = 1 <input type="checkbox"/> 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 <input type="checkbox"/> Buffer does not meet any of the criteria above points = 1 <p style="text-align: right;">Aerial photo showing buffers</p>	<p>Figure _____</p> <p style="text-align: center; font-size: 2em;">4</p>
	<p>H 2.2 <u>Corridors and Connections</u> (see p. 81)</p> <p>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? (<i>Dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor.</i>)</p> <p style="text-align: center;">YES = 4 points (go to H 2.3) NO = go to H 2.2.2</p> <p>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?</p> <p style="text-align: center;">YES = 2 points (go to H 2.3) NO = go to H 2.2.3</p> <p>H. 2.2.3 Is the wetland:</p> <ul style="list-style-type: none"> • 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? <p style="text-align: right;">YES = 1 point NO = 0 points</p>	<p style="text-align: center; font-size: 2em;">2</p>

Comments:

	<p>H 2.3 <u>Near or adjacent to other priority habitats listed by WDFW (see p. 82):</u> <i>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.</i></p> <p>___ Riparian: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.</p> <p>___ Aspen Stands: Pure or mixed stands of aspen greater than 0.8 ha (2 acres)</p> <p>___ Cliffs: Greater than 7.6m (25 ft) high and occurring below 5000 ft.</p> <p>___ 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.</p> <p>___ 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.</p> <p>___ Prairies: Relatively undisturbed areas (as indicated by dominance of native plants) where greases and/or forbs form the natural climax plant community.</p> <p>___ 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.</p> <p>___ Caves: A naturally occurring cavity, recess, void, or system of interconnected passages.</p> <p>___ Oregon white Oak: Woodlands stands of pure oak or oak/conifer associations where canopy coverage of the oak component of the stand is 25%.</p> <p>___ 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 <i>priority habitats</i>, 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.</p> <p>✓ 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.</p> <p>___ 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).</p> <p>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).</p>	1
	<p>H 2.4 <u>Wetland Landscape:</u> <i>Choose the one description of the landscape around the wetland that best fits (see p. 84)</i></p> <ul style="list-style-type: none"> • 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
	<p>H 2 TOTAL Score – opportunity for providing habitat Add the scores from H2.1, H2.2, H2.3, H2.4</p>	10
	<p>TOTAL for H 1 from page 8</p>	6
◆	<p>Total Score for Habitat Functions Add the points for H 1 and H 2; then <i>record the result on p. 1</i></p>	16

Comments:

Wetland name or number AB

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	<p>Estuarine wetlands? (see p. 86)</p> <p>Does the wetland unit meet the following criteria for Estuarine wetlands?</p> <p><input type="checkbox"/> The dominant water regime is tidal,</p> <p><input type="checkbox"/> Vegetated, and</p> <p><input type="checkbox"/> With a salinity greater than 0.5 ppt.</p> <p>YES = Go to SC 1.1 NO <input checked="" type="checkbox"/></p>
	<p>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</p>
	<p>SC 1.2 Is the wetland at least 1 acre in size and meets at least two of the following conditions?</p> <p>YES = Category I NO = Category II</p> <p><input type="checkbox"/> 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 <i>Spartina</i> 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 <i>Spartina</i> 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 <i>Spartina</i> in determining the size threshold of 1 acre.</p> <p><input type="checkbox"/> 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</p> <p><input type="checkbox"/> The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.</p>
	<p>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.)</p> <p>S/T/R information from Appendix D <input type="checkbox"/> or accessed from WNHP/DNR web site <input checked="" type="checkbox"/></p> <p>YES <input type="checkbox"/> Contact WNHP/DNR (see p. 79) and go to SC 2.2 NO <input checked="" type="checkbox"/></p>
	<p>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?</p> <p>YES = Category I NO <input checked="" type="checkbox"/> not a Heritage Wetland</p>
SC3	<p>Bogs (see p. 87)</p> <p>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. <i>If you answer yes you will still need to rate the wetland based on its function.</i></p> <p>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</p> <p>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</p> <p>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)?</p> <p>YES = Is a bog for purpose of rating NO = go to question 4</p> <p>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.</p> <p>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)?</p> <p>YES = Category I NO = Is not a bog for purpose of rating</p>

Wetland name or number AB

SC4	<p>Forested Wetlands (see p. 90)</p> <p>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? <i>If you answer yes you will still need to rate the wetland based on its function.</i></p> <p><u>N</u> 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).</p> <p>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.</p> <p>___ 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.</p> <p>YES = Category I NO = <input checked="" type="checkbox"/> not a forested wetland with special characteristics</p>	Cat. I
SC5	<p>Wetlands in Coastal Lagoons (see p. 91)</p> <p>Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?</p> <p>___ 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.</p> <p>___ 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 (<i>needs to be measured near the bottom.</i>)</p> <p>YES = Go to SC 5.1 NO <input checked="" type="checkbox"/> not a wetland in a coastal lagoon</p> <p>SC 5.1 Does the wetland meet all of the following three conditions?</p> <p>___ 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).</p> <p>___ 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.</p> <p>___ The wetland is larger than 1/10 acre (4350 square ft.)</p> <p>YES = Category I NO = Category II</p>	Cat. I Cat. II
SC6	<p>Interdunal Wetlands (see p. 93)</p> <p>Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)?</p> <p>YES = Go to SC 6.1 NO <input checked="" type="checkbox"/> not an interdunal wetland for rating</p> <p><i>If you answer yes you will still need to rate the wetland based on its functions.</i></p> <p>In practical terms that means the following geographic areas:</p> <ul style="list-style-type: none"> • 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 <p>SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is one acre or larger?</p> <p>YES = Category II NO = go to SC 6.2</p> <p>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?</p> <p>YES = Category III</p>	Cat. II Cat. III
◆	<p>Category of wetland based on Special Characteristics</p> <p>Choose the "highest" rating if wetland falls into several categories, and record on p. 1.</p> <p>If you answered NO for all types enter "Not Applicable" on p. 1</p>	N/A

Comments:

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. Tozher

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 alteration

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).

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 limited inundation/short duration of retention indicates low level of function

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.)

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.)

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

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

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 of 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. some 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.)

areas of seasonal/temporary inundation are present along with emergent vegetation and some cover. streams / other wetlands located nearby.

L-M

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.

Mid

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

- 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*

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.

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.)

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

*Dense shrubs & interspersed -
perennial water provide
potential habitat. little
apply for denning sites.*

*Low
mod*

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

*emergent vegetation
and snags provide
potential nesting habitat;
inverts provide forage
apptys.*

Low

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

- 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.)

- 1. Wetland has a perennial or intermittent surface-water connection to a fish-bearing water body YES
- 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

- 1. Dominant and codominant plants are native. YES
- 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

- 1. Site has documented scientific or educational use. NO
- 2. Wetland is in public ownership. NO
- 3. Parking at site is suitable for a school bus. NO

Likely or not likely to provide. (State your rationale.)	
Likely or not likely to provide. (State your rationale.)	Stream has perm H ₂ O, with shading vegetation areal ponding provide potential forage m
Likely or not likely to provide. (State your rationale.)	dominant species are native, however invasives are present, limited strata and species diversity. L-m
Likely or not likely to provide. (State your rationale.)	Private ownership and limited access limit educational opp'tys.

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

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. Toghiani

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. yes
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.)
 Slow moving water/ponding areas present in wetland, however, few sources of sediments present.

Low

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

WLE

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 cont. toxic nutrients toxicants to Murray creek. Ponding presence of emergent veg provide potential for Removal

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, em. 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 down stream in Murray Creek. Small size, limited diversity & limited interspersion limit this function.

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

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 general 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 in murray creek provides some potential invert. habitat.

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. *no*

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

seasonal/permanent H₂O and emergent vegetation provide limited amphib. habitat.

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

- 4. Woody debris present within wetland. *NO*
- 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

- 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. *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

- 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. *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*

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

Likely or not likely to provide.
(State your rationale.)
Permanent H₂O is present, but denning sites & forage supplies are limited.

Likely or not likely to provide.
(State your rationale.) L
Permanent H₂O, emergent vegetation and fish/other forage present. other habitat elements limited.

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

- 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.)

- 1. Wetland has a perennial or intermittent surface-water connection to a fish-bearing water body *yes*
- 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

- 1. Dominant and codominant plants are native. *N (only some)*
- 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

- 1. Site has documented scientific or educational use.
- 2. Wetland is in public ownership.
- 3. Parking at site is suitable for a school bus.

Likely or not likely to provide. (State your rationale.)	
Likely or not likely to provide. (State your rationale.)	<p><i>Murray Creek appears to provide habitat for some salmonids.</i></p>
Likely or not likely to provide. (State your rationale.)	<p><i>low plant diversity and structural diversity.</i></p>
Likely or not likely to provide. (State your rationale.)	<p><i>limited access precludes use for education</i></p>

low

low

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

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. Tocher

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.
3. Wetland is a closed (depressional) system.
4. If flowthrough, wetland has constricted outlet with signs of fluctuating water levels, algal mats, and/or lodged debris.
5. Wetland has dense woody vegetation.
6. Wetland receives floodwater from an adjacent water course.
7. Floodwaters come as sheet flow rather than channel flow.

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.
2. Slow-moving water and/or a deepwater habitat are present in the wetland.
3. Dense herbaceous vegetation is present.
4. Interspersion of vegetation and water is high in wetland.
5. Ponding of water occurs in the wetland.
6. Sediment deposits are present in wetland.

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

slope wetland - not apply to trap sediments.

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

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 opportunity 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. *yes*
- 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.)

*Penns deciduous vegetation produces carbon that can be exported via ditch. *com**

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

F. General Habitat Suitability

- 1. Wetland is not fragmented by development.
- 2. Upland surrounding wetland is undeveloped.
- 3. Wetland ^{Partially} has connectivity with other habitat types.
- 4. Diversity of plant species is high. _{NO}
- 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}

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

wetland C likely appears to provide limited habitat. It does provide a potential source of H₂O

LOW

G. Habitat for Aquatic Invertebrates

- 1. Wetland must have permanent or evidence of seasonal inundation for this function to be provided. _{NO}
- 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.

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

NO permanent or seasonal inundation.

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) _{NO}
- 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}

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

other nearby w's may provide spawning habitat; wetland C likely provides modest foraging habitat.

LOW

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

- 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.)
- 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.

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.)
no permanent H₂O

Likely or not likely to provide.
(State your rationale.)
wetland C has undeveloped buffer and some potential nesting/roosting habitat, but limited forage opportunities.

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

- 6. Wetland contains invertebrates, amphibians, and/or fish.
- 7. Buffer contains relatively likely 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.)

- 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

- 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

- 1. Site has documented scientific or educational use.
- 2. Wetland is in public ownership.
- 3. Parking at site is suitable for a school bus.

	Likely or not likely to provide. (State your rationale.)
	Likely or not likely to provide. (State your rationale.) <u>no fish bearing H₂O</u>
	Likely or not likely to provide. (State your rationale.) <u>non-natives / invasives are common.</u>
	Likely or not likely to provide. (State your rationale.) <u>limited access for educational/scientific use.</u>

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

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, *NO*
 - a bog,
 - a mature forest.

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. Toghiani

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 L-H
w/ with lodged debris
near constricted outlet
debris dam. no
overtank / sheetflow
from stream, and
w. 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/ H₂O, m
however, sources of
sediment are limited.*

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

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.

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.

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

F. General Habitat Suitability

- 1. Wetland is not fragmented by development. *No*
- 2. Upland surrounding wetland is undeveloped. *25070*
- 3. Wetland has connectivity with other habitat types. *yes - upslope*
- 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 interspersions. *no*
- 7. Evidence of wildlife use, e.g., tracks, scat, gnawed stumps, etc., is present *no*

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*

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) *no*
- 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*

	<p>Likely or not likely to provide. (State your rationale.)</p> <p>wetland AB is located in a broad, relatively undisturbed upland on ft. hills.</p>
	<p>Likely or not likely to provide. (State your rationale.)</p> <p>Dense emergent vegetation, varying levels of water and cover provide good habitat potential for inverts.</p>
	<p>Likely or not likely to provide. (State your rationale.)</p> <p>small area of ponding limits potential amphib. habitat</p>

M

H

M-H

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

- 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 H₂O*
- 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.) <i>potential for water mammal habitat is limited by small size of wetland and location relatively far from other wetlands</i>
Likely or not likely to provide. (State your rationale.)
Potential insect habitat & forest cover provide limited habitat for aquatic birds

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- 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.)

- 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

- 1. Dominant and codominant plants are native. *yes*
- 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

- 1. Site has documented scientific or educational use. *no*
- 2. Wetland is in public ownership. *no*
- 3. Parking at site is suitable for a school bus. *no*

	Likely or not likely to provide. (State your rationale.)
	Likely or not likely to provide. (State your rationale.)
	<p><i>A-Z is separated from other disjunct wetlands by a culvert & very steep slope. likely inaccessible to anadromous fish.</i></p>
	Likely or not likely to provide. (State your rationale.)
	<p><i>few mature trees and limited diversity limit this function</i></p>
	Likely or not likely to provide. (State your rationale.)
	<p><i>PR military ownership lack of access prohibits most educational use.</i></p>

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

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, *NO*
 - > a bog,
 - > a mature forest.

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

*NO CSA species present,
or unusual/rare
plant assemblages.*

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