JONES FAMILY TRUST
EDGEMOOR PROPERTY BIOLOGICAL CRITICAL AREAS RECONNAISSANCE & DELINEATION REPORT
BELLINGHAM, WASHINGTON

JANUARY 2010

Prepared for:

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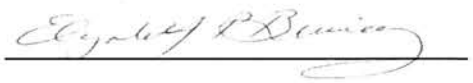

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QUALIFICATIONS

Elizabeth Binney, PhD, PWS is a plant/wetland ecologist with over 20 years of experience with wetland delineation, stream assessment, and fish and wildlife assessment beginning in 1988. She earned her doctorate in Plant Ecology from the University of British Columbia. Dr. Binney teaches wetland identification and delineation courses at Portland State University, University of Washington, and Western Washington University as well wetland assessment, general biology and ecology, and biostatistics. She is a student advisor for the University of Washington Wetland Science and Management Certificate Program. Dr. Binney is a certified Professional Wetland Scientist (PWS certification number 1169) through the Society of Wetland Scientists Professional Certification Program and is a certified wetland delineator through the Seattle District of the U.S. Army Corps of Engineers provisional Wetland Delineator Certification Program. She completed the five-day training course for the Washington State Wetland Function Assessment Project Methods for Assessing Wetland Functions and the two-day training for the Department of Ecology wetland rating system. Her areas of expertise include wetland identification, wetland delineation, wetland mitigation design, wetland restoration design, stream and fish and wildlife assessments, permitting, project management, vegetation analysis, native plant identification, native plant landscape design, and statistical analyses.

Dr. Binney performed the field reconnaissance, identified and delineated the wetland, identified fish and wildlife habitat conservation areas, and authored this report.

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1.0 EXECUTIVE SUMMARY

Pacific Ecological Consultants, LLC reviewed the approximate 40 acre Jones Edgemoor Property and within 300 feet property for biological critical areas. The property is located in Bellingham, Washington and is adjacent to Mud Bay, in the northern portion of Chuckanut Bay. A Category III palustrine forested seasonally flooded/saturated slope occurs in the northeast portion of the property. The on-site portion of the wetland, Wetland A, is 20,511 square feet in size. With current land use intensity as high, the City of Bellingham regulated standard wetland buffer for this wetland is 80 feet. Fish and Wildlife Habitat Conservation Area (BMC 16.55.470) include the parcel as a Urban Natural Open Space, the mud flats of Mud Bay as Priority Habitat, and an 800 foot Bald Eagle Management Zone landward of the shoreline that includes observed bald eagle perch habitat along the shoreline.

2.0 INTRODUCTION

As requested by the Anne Jones Family Trust LP, Pacific Ecological Consultants, LLC reviewed the parcels (approximately 40 acres total), referred to as the Edgemoor Property for the purposes of this report, in December 2009 to determine the presence of wetlands, streams, and priority species and habitats/habitat conservation areas (biological critical areas). The parcel is located north of Chuckanut Bay in the City of Bellingham Edgemoor Neighborhood, Washington, within a portion of Section 13, Township 37 North, Range 2 East, W.M. (Figures 1 and 2).

The purpose of our review is to provide an assessment of the presence, location, and extent of biological critical areas and associated buffers under the jurisdiction of the City of Bellingham, the Washington State Department of Ecology (Ecology), the U.S. Army Corps of Engineers (Corps), and any other relevant agency.

3.0 METHODS

3.1 Preliminary & On-site Review

To determine the presence and extent of wetlands, streams, habitat conservation areas, and other biological critical areas on the Edgemoor Property we perform a preliminary data review and an on-site field reconnaissance. The preliminary data review includes but is not limited to a review of the following documents: the National Wetland Inventory (NWI); local jurisdiction wetland, stream, habitat, and species maps; Natural Resource Conservation Service (NRCS) soil surveys; NRCS hydric soil lists; topographic maps; and, aerial photographs. The on-site field reconnaissance involves traversing the entire property to identify wetlands and other critical areas/habitats, and collecting data to characterize the dominant plant communities, soils, and hydrology. Figure 2 depicts the approximate locations of the sample points. Data Forms for individual sample points are in Appendix A.

The goal of this review is to describe the biological aspects of the parcel in order to provide sufficient information for the client and regulating agency to make informed decisions regarding wetlands, streams, and other critical areas.

3.2 Wetland Identification & Delineation

The wetlands referred to in this report follow the Corps definition: "*...those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.*" (Environmental Laboratory 1987) and the State of Washington, *Washington State Wetlands Identification and Delineation Manual* (Washington State Department of Ecology 1997). Through Section 404 of the Clean Water Act, the Corps has the authority to regulate the placement of fill materials in wetlands and other waters of the U.S., and requires permits for such activities. The state has jurisdiction over wetlands and other waters through Section 401 of the Clean Water Act and the State Clean Water Act 90.48 RCW.

All wetlands are identified and delineated based on the presence of hydrophytic vegetation, hydric soils, and wetland hydrology as described in the Corps of Engineers *Wetland Delineation Manual* (Environmental Laboratory 1987), Corps Regional Supplements (Army Corps of Engineers 2008), and the *Washington State Wetlands Identification and Delineation Manual* (Washington State Department of Ecology 1997). *March 1997.* All three parameters must be present for an area to be considered a jurisdictional wetland under normal circumstances. Atypical situations and problem areas are treated per the Corps and state manuals.

All other ecological investigative work utilizes standard methods and protocols for the respective discipline, e.g., fish and wildlife assessments, priority habitats and species, listed species, vegetation analysis, hydrology monitoring, etc. The City of Bellingham County regulates all activities in and around wetlands, streams, and other critical areas through the City of Bellingham Municipal Code Chapter 16.55 Critical Areas (BMC 16.55).

3.3 Wetland Categorization & Function Assessment

In order to categorize wetlands we use the local jurisdiction system or the revised Washington State Wetland Rating System for Western Washington (Hruby 2004) if the local jurisdiction lacks a categorization system. This system takes into account the hydrogeomorphic class of the wetland, sensitivity to disturbance, significance of the wetland, its degree of rarity, replacement potential replaced, and functions the wetland provides.

We evaluate wetland function with the *Methods for Assessing Wetland Functions Volume I: Riverine and Depressional Wetlands in the Lowlands of Western Washington* (WAFAM; Hruby et al. 1999). This method is based on the hydrogeomorphic classification, which classifies wetlands based on landscape position and hydrologic regime. WAFAM relies on indicators of functions to assess potential performance and the opportunity the wetland has to perform that function.

When the WAFAM method is not applicable, e.g., slope, lacustrine fringe, or flats wetlands, wetlands outside of the lowlands, or wetlands that are too small we use a qualitative assessment based on a combination of best professional judgment, experience, the wetland functions listed in the *Washington State Wetland Rating System for Western Washington* (Hruby 2004) and WAFAM, as well as several other wetland functional assessment methods.

4.0 SITE DESCRIPTION

4.1 Preliminary Document Review

4.1.1 City of Bellingham Wetland Inventory Map

The City of Bellingham Wetland Inventory Map (2003) does not map wetlands on or near (within approximately 300 feet) of the Jones Edgemoor Property. We identified and delineated a wetland in the northeast portion of the property (Figures 2 and 3).

4.1.2 NWI

The National Wetlands Inventory (NWI) does not map wetlands on or near the Jones Edgemoor Property (Figure 4). Mud Bay, the north end of Chuckanut Bay that borders the property, is mapped as an estuary. As stated above, we observed a wetland in the northeast portion of the property (Figures 2 and 3).

4.1.3 NRCS Soils

The Natural Resource Conservation Service (NRCS) Web Soil Survey maps the 52-Everett-Urban land complex, 5 to 20 percent slopes and the 110-Nati loam, 30 to 60 percent slopes soil units on the Jones Edgemoor Property (Figure 5). These soil units are not listed as hydric by the NRCS; however, they contain hydric soil inclusions. Excerpts of the NRCS descriptions for these soil units (Goldin 1992):

> **52-Everett-Urban land complex, 5 to 20 percent slopes.** This map unit is on outwash terraces. This unit is 50 percent Everett gravelly sandy loam and 30 percent Urban land. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the selected scale of mapping.
>
> Included in this unit are small areas of Chuckanut, Squalicum, Sehome, Whatcom, and Labounty soils and small areas of Everett soils that have slopes of more than 20 percent or less than 5 percent. Included areas make up about 20 percent of the total acreage.
>
> The Everett soil is deep and well drained. It formed in a mixture of volcanic ash and alluvium over glacial outwash and glacial till. When mixed to a depth of 6 inches, the surface layer is dark yellowish brown gravelly sandy loam. The upper 7 inches of the subsoil is dark brown gravelly sandy loam. The lower 12 inches is strong brown very gravelly sandy loam. Dense glacial till that crushes to very gravelly sandy loam is at a depth of 41 inches. The depth to dense glacial till ranges from 40 to 60 inches. The dense glacial till is similar to a cemented pan. In some areas the surface layer is very gravelly sandy loam and the soil has 15 to 35 percent rock fragments in the subsoil. In other areas the soil is very gravelly sandy loam in the upper part of the substratum, has dense glacial till below a depth of 60 inches, or weakly cemented dense glacial till.
>
> Permeability is moderate in the upper part of the Everett soil, rapid in the next part, and very slow in the dense glacial till. Available water capacity is low. The effective rooting depth is limited by a seasonal high water table, which is at a depth of 3.5 to 5.0 feet from the December through April. Runoff is medium, and the hazard of water erosion is moderate.

The Urban land consists of areas covered by streets, buildings, parking lots, and other structure that so obscure the soils that identification of the soil series is not feasible.

110-Nati loam, 30 to 60 percent slopes. This moderately deep, well drained soil is on foothill back slopes and ridges. It formed in colluviums and slope alluvium with an admixture of volcanic ash and glacial till. The colluvium and alluvium are derived from sandstone and siltstone.

Typically, the surface is covered with a mat of needles, leaves, and twigs1 inches thick. The surface layer is dark brown loam 10 inches thick. The subsoil is dark yellowish brown loam 28 inches thick. Sandstone is at a depth of about 38 inches. The depth to sandstone or siltstone ranges from 20 to 40 inches. In some areas the surface layer is sandy loam or silt loam. In other areas the soils is 40 to 60 inches deep over bedrock.

Included in this unit are small areas of Squalicum, Sehome, Chuckanut, and Comar soils; Bellingham and Shalcar soils in depressions; Rock outcrop; and Nati soils that have slopes of more than 60 percent or less than 30 percent. Included areas make up about 10 percent of the total acreage.

Permeability is moderate in the Nati soil. Available water capacity also is moderate. The effective rooting depth is 20 to 40 inches. Runoff is medium, and the hazard of water erosion is moderate.

4.1.4 WDFW PHS Map

The Washington Department of Fish and Wildlife (WDFW) Priority Habitat and Species (PHS) maps and report map the entire property and surrounding area as containing priority habitat. Priority species are mapped on Clark's Point and in Chuckanut and Mud Bays. The property is mapped as Urban Natural Open Space and within 800 feet landward of the shoreline is mapped as Bald Eagle (*Haliaeetus leucocephalus*) Buffer Management Zone. Mud Bay is mapped with the following Priority Habitats: Eelgrass; Turf Algae; Potential Surf Smelt/Sand Lance Spawning Areas; and, Hardshell Intertidal Clam.

4.2 General Site Description

The approximate 40 acre Jones Edgemoor Property is located in the southern portion of the City of Bellingham, north of Chuckanut Bay, in the Edgemoor Neighborhood (Figures 1 and 2). The parcel abuts Mud Bay, which is at the north end of Chuckanut Bay (Figures 1 and 2). Land use in the vicinity of the property is a mix of residential and open space. The property is on a hillslope that generally slopes south-southeast to Mud Bay. It consists of coniferous forest that appears to have been logged ca. 1970. A palustrine forested (PFO) wetland was identified and delineated in the northeast portion of the property (Wetland A; Figures 2 and 3). A seep that discharges from the slope then percolates back into the ground was observed near the southeast corner of the property (Figure 3). A number of trees along the shoreline are suitable bald eagle perch trees.

We did not observe any other wetlands, streams, or habitat conservation areas on or within approximately 300 feet of the project site.

4.2.1 Vegetation

The vegetation on the property is predominantly upland coniferous forest that was logged ca. 1970 with wetland vegetation in the PFO wetland located in the northeast corner of the property (Figures 1-3). The upland forest is fairly homogenous throughout the property with a younger stand of alder and willow saplings along the 10th Street right of way and a canopy dominated by maple along Viewcrest Road. An area south of Viewcrest Road within what appears to be an historic rock borrow bit is dominated by deciduous trees. A number of trees have been cut between the 10th Street right of way and the forested wetland and within the wetland (Figure 3).

Hydrophytic vegetation is one component of a wetland. Plant indicators (Reed 1988, 1993; Lichvar and Kartesz. 2009) are used to determine the presence of hydrophytic vegetation. Hydrophytic vegetation is generally dominated by plants with an indicator status of Facultative (FAC), Facultative Wetland (FACW), or Obligate Wetland (OBL) (Environmental Laboratory 1987; U.S. Army Corps of Engineers 2008). Indicator status of Facultative Upland (FACU) and Obligate Upland (UPL) are given to plants that usually occur in non-wetlands or nearly always occur in non-wetlands respectively. No Indicator (NI) is given to species where sufficient information is lacking to give the species an indicator status.

Upland Coniferous Forest

This vegetation type occurs throughout the property. This vegetation type is dominated by a canopy of Douglas fir (*Pseudotsuga menziesii*; FACU) with a subordinate of big leaf maple (*Acer macrophyllum*; FACU), and generally low cover (10 percent or less) of Scouler's willow (*Salix scouleriana*; FAC), western yew (*Taxus brevifolia*; UPL), Pacific madrone (*Arbutus menziesii*; UPL), and bitter cherry (*Prunus emarginata*; FACU). The shrub layer is dominated by an often dense cover of salal (*Gaultheria shallon*; FACU) and in some areas is dominated by Oregon grape (*Mahonia nervosa*; FACU), with subordinates of beaked hazelnut (*Corylus cornuta*; FACU), ocean spray (*Holodiscus discolor*; UPL), wood rose (*Rosa gymnocarpa*; FACU), red huckleberry (*Vaccinium parvifolium*; UPL), and serviceberry (*Amelanchier alnifolia*; FACU). The herbaceous layer is dominated by sword fern (*Polystichum munitum*; FACU) with low cover of trailing blackberry (*Rubus ursinus*; FACU) in some areas.

The area along the upper portion of the 10th Street right of way and between the right of way and the forested wetland (Sample Point 8; Figure 2) is dominated by a dense stand of sapling to young trees of Scouler's willow and red alder (*Alnus rubra*; FAC).

A small area in the northern portion of the property, south of Viewcrest Road, in what appears to be an historic rock borrow pit (Sample Point 5; Figure 2) is dominated by a canopy of fairly even distribution of red alder, big leaf maple, paper birch (*Betula papyrifera*; FAC), and Douglas fir. The shrub layer is dominated by ocean spray. The herbaceous layer is dominated by sword fern, Henderson's sedge (*Carex hendersonii*; FAC), and trailing blackberry.

The area along Viewcrest Road is dominated by a canopy of big leaf maple with a subordinate of western red cedar (*Thuja plicata*; FAC). The shrub layer is dominated by snowberry, Indian

plum, vine maple, and ocean spray. The herbaceous layer is dominated by sword fern with sparse cover of stinging nettle (*Urtica dioica*; FAC).

Palustrine Forested Wetland
Wetland vegetation occurs in the palustrine forested wetland in the northeast portion of the property (Figures 2 and 3). It is dominated by a canopy of red alder with a shrub layer dominated by salmonberry (*Rubus spectabilis*; FAC). The herbaceous layer is dominated by giant horsetail (*Equisetum telmateia*; FACW), lady fern (*Athyrium filix-femina*; FAC), and Watson's willow herb (*Epilobium ciliatum*; FACW). Hydrophytic vegetation in this wetland was met by the Dominance Test (Indicator 1; U.S. Army Corps of Engineers 2008).

4.2.2 Soils

Upland Forest
Soils observed in the uplands were generally characteristic of the NRCS mapped Everett and Nati soil units. The soils were generally very dark brown (10YR 2/2) sandy loam in the top 8 to 10 inches underlain by very dark grayish brown (10YR 3/2) sandy gravelly loam or gravelly sandy loam. Deeper soils along the bluffs at the southern end of the parcel were gray (2.5Y 5/1) silty loams in the top approximate 8 inches and are underlain by dark yellowish brown (10YR 3/4) silty loam.

Palustrine Forested Wetland
The soils observed in the PFO wetland were black (10YR 2/1) sandy silt loams in the top 10 inches underlain by grayish brown (2.5Y 4/2) gravelly silt loam with 20 percent dark yellowish brown (10YR 4/4) redox concentrations as soft masses on the ped faces. This soil meets hydric soil indicators Depleted Matrix Below Dark Surface (A1) and Depleted Matrix (F6) Indicators (U.S. Army Corps of Engineers 2008).

4.2.3 Hydrology

Our reconnaissance and wetland delineation occurred during the typical wet season for this region. Surface hydrology was only observed in the PFO wetland and seasonal seep. Hydrology was observed at 7.5 inches below the surface in the area dominated by Scouler's willow and red alder (Sample Point 8; Figure 2). This area is upslope of the PFO wetland. This area does not have indicators of hydrophytic vegetation or hydric soil.

Wetland hydrology was observed in the PFO wetland (Sample Plot 7; Figure 2). Observed wetland hydrology consisted of areas of surface water with up to three inches of ponding, saturation to the soil surface, and what appears to be a seasonal high/perched water table. Wetland hydrology in this wetland was met by Indicators A1, A2, and A3 (U.S. Army Corps of Engineers 2008). Hydrology appears to be from upslope runoff and seasonal groundwater discharge. Water from the wetland enters a stormwater system where the water eventually flows to Mud Bay.

The seasonal seep (Figure 3) is an area of groundwater discharge. Water from the seep discharges from the hillslope then percolates back into the ground prior to reaching Mud Bay, with no direct surface connection to the bay. Several smaller seeps were observed in this area.

5.0 WETLANDS

5.1 General Description

The on-site PFO wetland occurs in the northeast corner of the parcel (Wetland A; Figures 2 and 3). We identified and delineated the wetland boundaries of the on-site wetland in the field in December 2009; the wetland boundary was surveyed by Pacific Survey and Engineering in December 2009. The wetland continues off-site to the north and east; however, the majority of the wetland is on the Jones Edgemoor Property.

The wetland is a palustrine forested seasonally flooded/saturated (PFOE) slope wetland. Hydrology, as stated above, appears to be from upslope runoff and seasonal ground water discharge. Water from the wetland flows to Mud Bay via a storm drain system.

5.2 Wetland Rating

Wetland Categories (I – IV) are determined through the Washington State Wetland Rating System (Hruby 2004) per BMC 16.55.280 (rating forms are in Appendix B). The wetland category is used in combination with the rating habitat score and land intensity use to determine the standard buffer width (BMC 16.55.340). The rating system (Hruby 2004) rates wetlands based on their hydrogeomorphic classification (HGM). The PFO wetland, Wetland A, is rated as a Category III Wetland with a Habitat Score of 18 (Appendix B).

5.3 Wetland Function Evaluation

Wetland function potential is dependent upon the amount of seasonal inundation, vegetation composition, and soils present. Opportunity for the wetland to perform any particular function is primarily dependent upon the surrounding landscape. This wetland is a slope wetland so cannot be assessed by WAFAM, therefore a qualitative function evaluation for the PFO wetland, Wetland follows.

This wetland is a slope wetland. Hydrologic functions are inherently low for slope wetlands as there is little to no water storage or attenuation, although it does function as a groundwater discharge area. This wetland does not have opportunity to reduce flooding and erosion as runoff does not drain to streams or rivers with flooding problems. Water from the wetland is directed to a stormwater drain. Water quality function for this wetland are low as well, partially because of the nature of a slope wetland and partially because there is not a naturally well developed herbaceous layer. This wetland does have opportunity to improve water quality because it adjacent and downslope of residential areas. Habitat functions are increased by the proximity to Mud Bay and the buffer provided by the undisturbed upland forest. The wetland has snags and logs that provide habitat. The wetlands may have habitat functions related to amphibians forage; however, the wetlands do not appear to have the duration of hydrology necessary for amphibian breeding.

6.0 HCA/PRIORITY SPECIES & HABITATS

6.1 General Habitat

Wildlife habitats on the property consist of upland forest, PFO wetland, marine shoreline, and mud flats. The property is on the south edge of a residential area, and is surrounded by developed residential land on three sides. The property because it is contiguousness with the marine shoreline and mud flats provide for wildlife habitat in this area (Figure 1). Wildlife observed on the parcel by direct observation or signs (e.g., scat or tracks) include black-tailed deer (*Odocoileus hemionus*), pileated woodpecker (*Dryocopus pileatus*), and Douglas' squirrel (*Tamiasciurus douglasii*). Other species that likely occur on the property include accipiters such as the sharp-shinned hawk (*Accipiter striatus*) and Cooper's hawk (*Accipiter cooperii*), songbird, other woodpecker species as well as, amphibians, and small mammals such as mice and voles. In addition, bald eagle perch habitat was observed along the shoreline.

6.2 Priority Habitat and Species

WDFW Priority Habitats and Species are City of Bellingham Fish and Wildlife Habitat Conservation Areas (HCAs) (BMC 16.55.470 A). WDFW maps the property as Urban Natural Open Space and within 800 feet landward of the shoreline is mapped as Bald Eagle (*Haliaeetus leucocephalus*) Buffer Management Zone. Mud Bay is mapped with the following Priority Habitats: Eelgrass; Turf Algae; Potential Surf Smelt/Sand Lance Spawning Areas; and, Hardshell Intertidal Clam.

We did not observe any other endangered, threatened, or sensitive plant or animal species or priority habitats regulated by the City of Bellingham, Washington State, or the federal government on the subject parcel.

7.0 DETERMINATION & REGULATIONS

7.1 Determination

We identified a Category III slope PFO wetland, Wetland A, in the northeast portion of the Jones Edgemoor Property (Figures 2 and 3). The on-site portion of the wetland is 20,511 square feet in size. Wetland identification was made by the presence of positive indicators of hydrophytic vegetation, hydric soil, and although marginal, wetland hydrology. We did not observe any other wetlands within approximately 300 feet of the property boundaries.

We observed the following HCAs on and adjacent to the property: Urban Natural Open Space; bald eagle perch habitat along the shoreline inclusive of the 800 foot Bald Eagle Buffer Management Zone; and priority habitat in the mud flats of Mud Bay as listed in Section 6.

The seasonal seep (Figure 3) and the smaller seeps in this general area do not appear to be biological critical areas (HCA stream) because they lack a surface connection to Mud Bay. Seeps such as these are often consider geological critical areas (BMC 16.55). Geological critical areas are beyond the scope of this report; please refer to the Geologic Feasibility Study (Element Solutions 2009).

7.2 Regulation

7.2.1 City of Bellingham Regulations

Wetland

The City of Bellingham regulates the on-site wetland and associated buffers (BMC 16.55). Wetland buffer widths are based on a combination of the wetland category, Habitat Score from the wetland rating, and land use intensity (BMC 16.55.340). The current land use intensity per BMC 16.55.510) is high. The on-site PFO wetland, Wetland A, has a standard 80 foot buffer (BMC 16.55.340 B). Buffers are measured in horizontally in a landward direction from the edge of the wetland boundary as surveyed in the field. Permits are required and mitigation is generally required for any impacts to wetlands or associated buffers.

Fish & Wildlife HCA

Fish and Wildlife Habitat Conservation Area (BMC 16.55.470) include the parcel as a Urban Natural Open Space, mud flats of Mud Bay, and an 800 foot Bald Eagle Management Zone landward of the shoreline that include bald eagle perch habitat along the shoreline.

7.2.2 Federal and State Regulations

The U.S. Army Corps of Engineers (Corps) requires notification of all disturbances/impacts to **all** wetlands, streams, and other waters and it is incumbent upon the landowner to disclose such disturbances. Isolated wetlands are not under the jurisdiction of the Corps; however, the Corps must determine isolated wetland status. Through Section 404 of the Clean Water Act wetland disturbances/impacts generally require a Nationwide Permit or an Individual Permit from the Corps depending upon disturbance/impacts and project type. The Washington State Department of Ecology (Ecology) and the Environmental Protection Agency (EPA) require Section 401 water quality certification for disturbance of wetlands depending upon the type of project. Ecology regulates all wetlands (RCW 90.48). Compensatory mitigation and an alternatives analysis are generally required for wetland disturbances/impacts by both the Corps and Ecology. Both require certification that no listed nor known endangered, threatened, or sensitive plant or animal species, or National Historic Places are present on the parcel.

8.0 LIMITATIONS

We have used the most current, established methods to make determinations as to the location, size, and types of wetlands on this parcel. All of the above statements are based on our best professional judgment. Although we follow the federal, state, and local criteria, we cannot guarantee that the U.S. Army Corps of Engineers or the local jurisdiction determination will correspond to ours. Please note that regulations pertaining to wetlands and other critical areas are subject to change over time.

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FIGURES

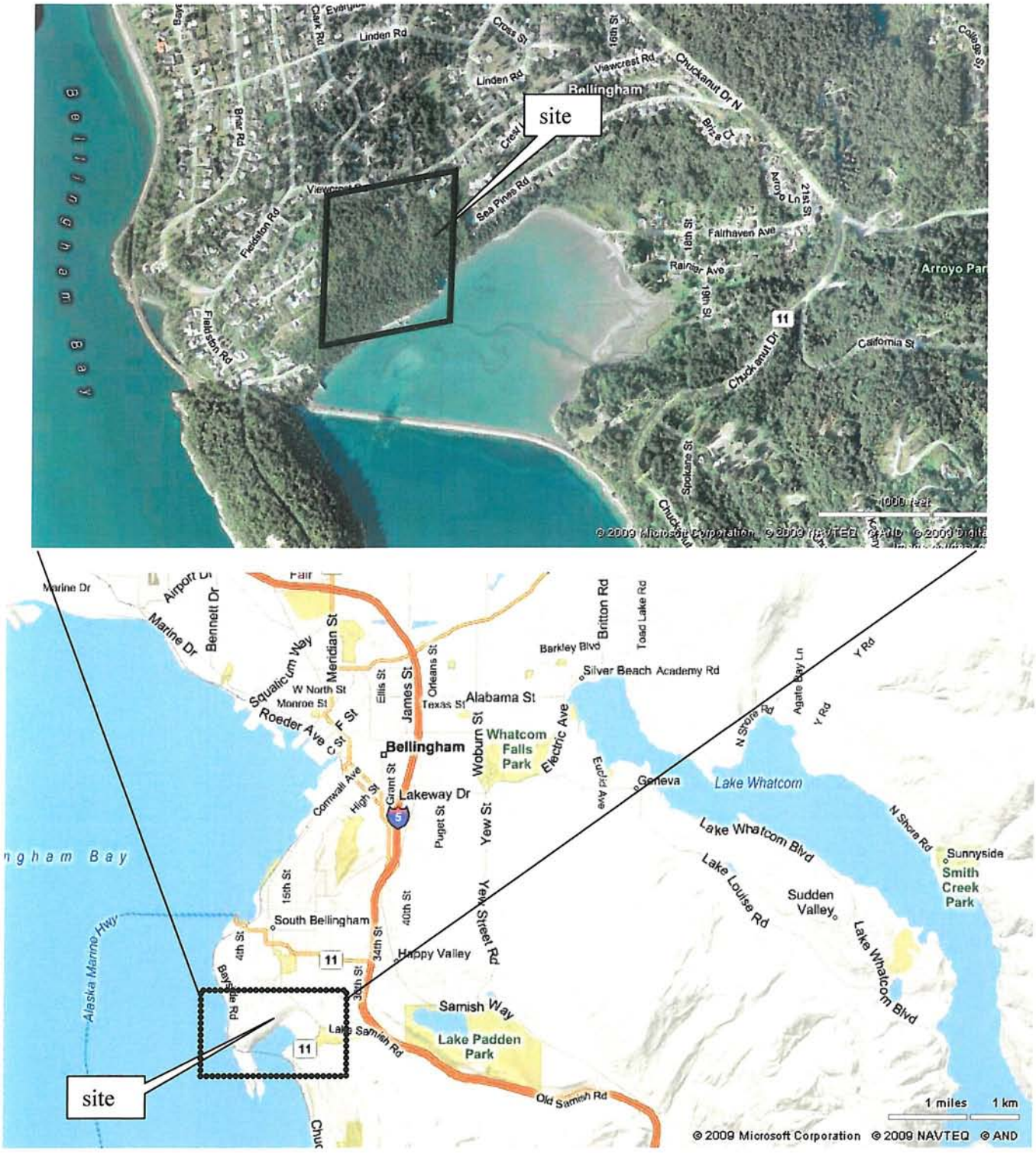

Figure 1. Location of the Jones Edgemoor property; property location, size, and shape are approximate.

PACIFIC SURVEY & ENGINEERING INC
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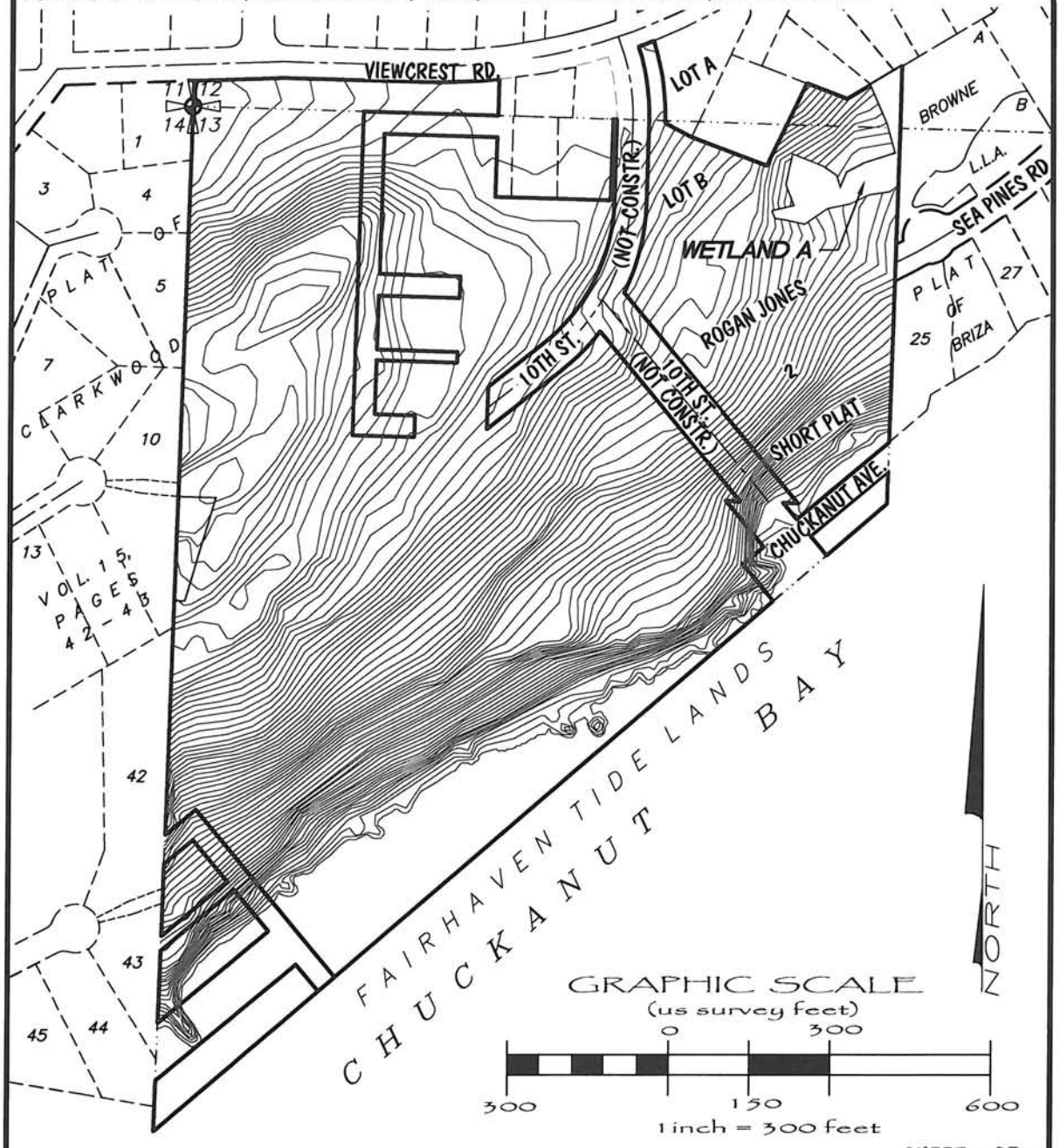
JONES EDGEMOOR - VICINITY MAP EXHIBIT

SITUATE IN A PORTION OF THE SW 1/4 OF SECTION 12 & NW 1/4 OF SECTION 13, TOWNSHIP 37 NORTH, RANGE 2 EAST, W.M., WHATCOM COUNTY, WASHINGTON



SHEET 1 OF 1
PSE PROJECT: 2009-131
DRAWN: TG DATE: 01/07/2010
DWG: 2009131_wetland_exhibit.dwg

PROJECT LATITUDE: N 48°42'06.10" LONGITUDE: W 122°30'21.29"

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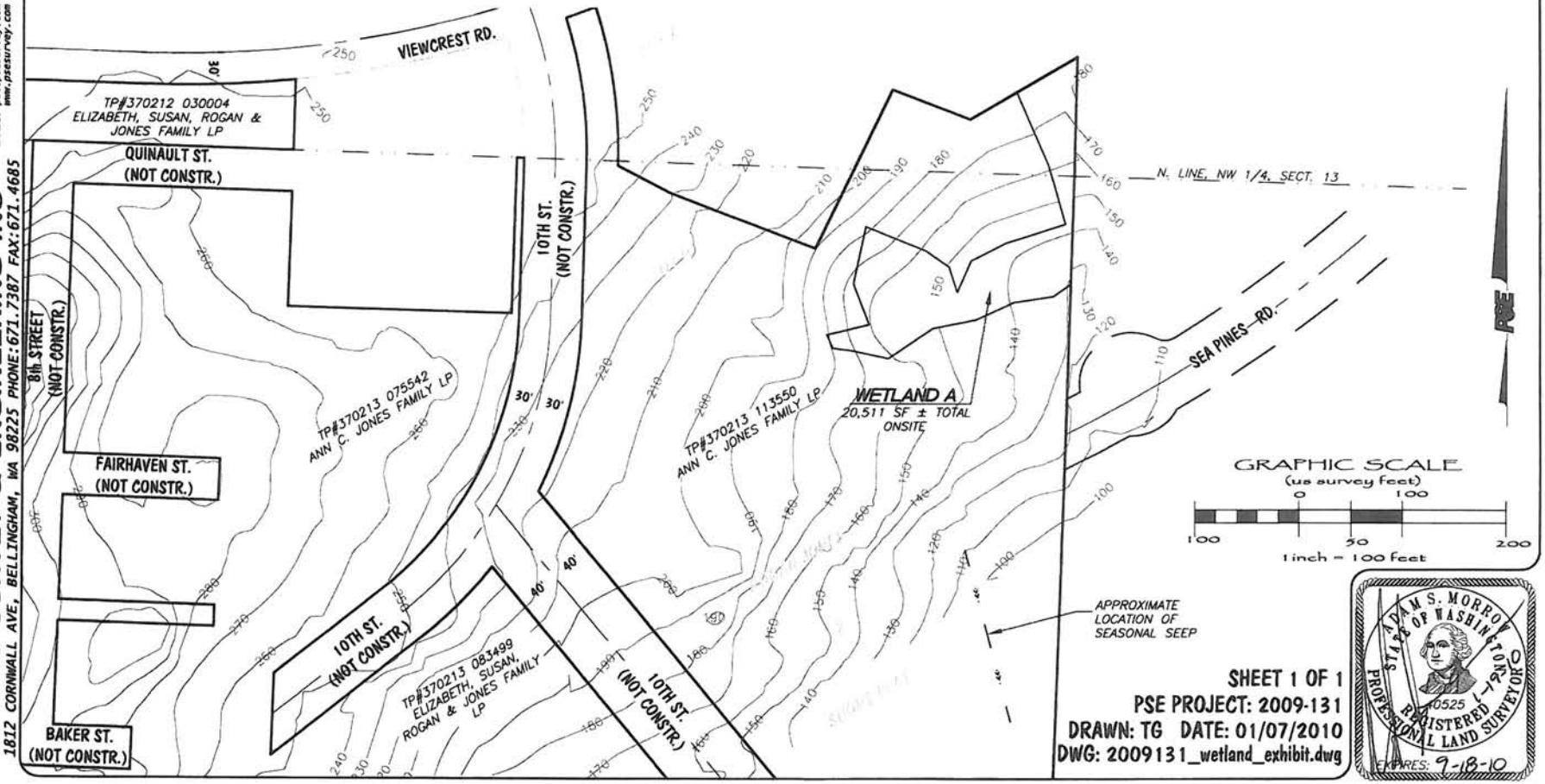
JONES EDGEMOOR PROPERTY
WETLAND EXHIBIT

SITUATE IN A PORTION OF THE SW 1/4 OF SECTION 12 & NW 1/4 OF SECTION 13, TOWNSHIP 37 NORTH, RANGE 2 EAST, W.M., WHATCOM COUNTY, WASHINGTON

SURVEY NOTES *NOTE: ONLY PORTION OF PROPERTY CONTAINING WETLAND 'A' DEPICTED.

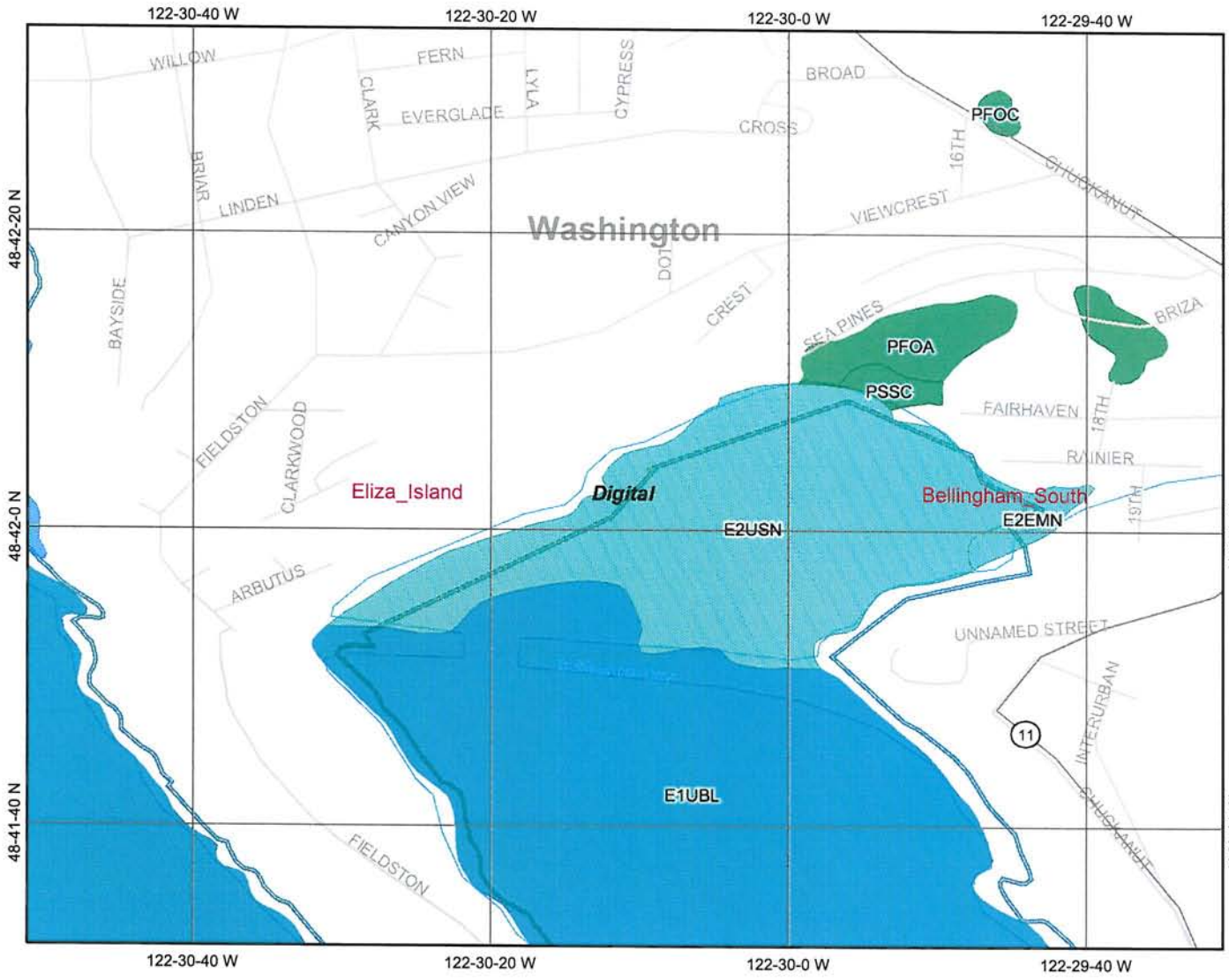
1) DATA FOR THIS SURVEY WAS GATHERED BY FIELD TRAVERSE UTILIZING ELECTRONIC DATA COLLECTION IN DECEMBER OF 2009.
2) WETLANDS DELINEATED BY PACIFIC ECOLOGICAL CONSULTANTS IN DECEMBER 2009 AND SURVEYED BY PSE IN DECEMBER 2009.
3) HORIZONTAL DATUM: CITY OF BELLINGHAM (1973) BASIS OF BEARINGS: THE MONUMENTED CENTERLINE OF VIEWCREST ROAD PER ROS AF NO. 2080100076.
4) TOPOGRAPHIC & BOUNDARY MAPPING BY LEONARD, BOUDINOT & SKODJE, INC., DATED FEBRUARY 2006.

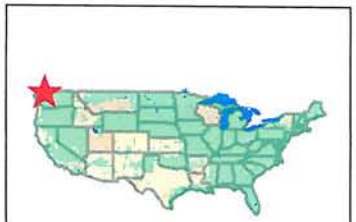


SHEET 1 OF 1
PSE PROJECT: 2009-131
DRAWN: TG DATE: 01/07/2010
DWG: 2009131_wetland_exhibit.dwg

ADAM S. MORROW
STATE OF WASHINGTON
10525
REGISTERED PROFESSIONAL LAND SURVEYOR
EXPIRES: 9-18-10

Internet Mapping Framework





Legend

Ohio_wet_scan

- 0
- 1
- Out of range

Interstate

Major Roads

Other Road

- Interstate
- State highway
- US highway

Roads

Cities

USGS Quad Index 24K

Lower 48 Wetland Polygons

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

Lower 48 Available Wetland Data

- Non-Digital
- Digital
- No Data
- Scan

NHD Streams

Counties 100K

States 100K

South America

North America

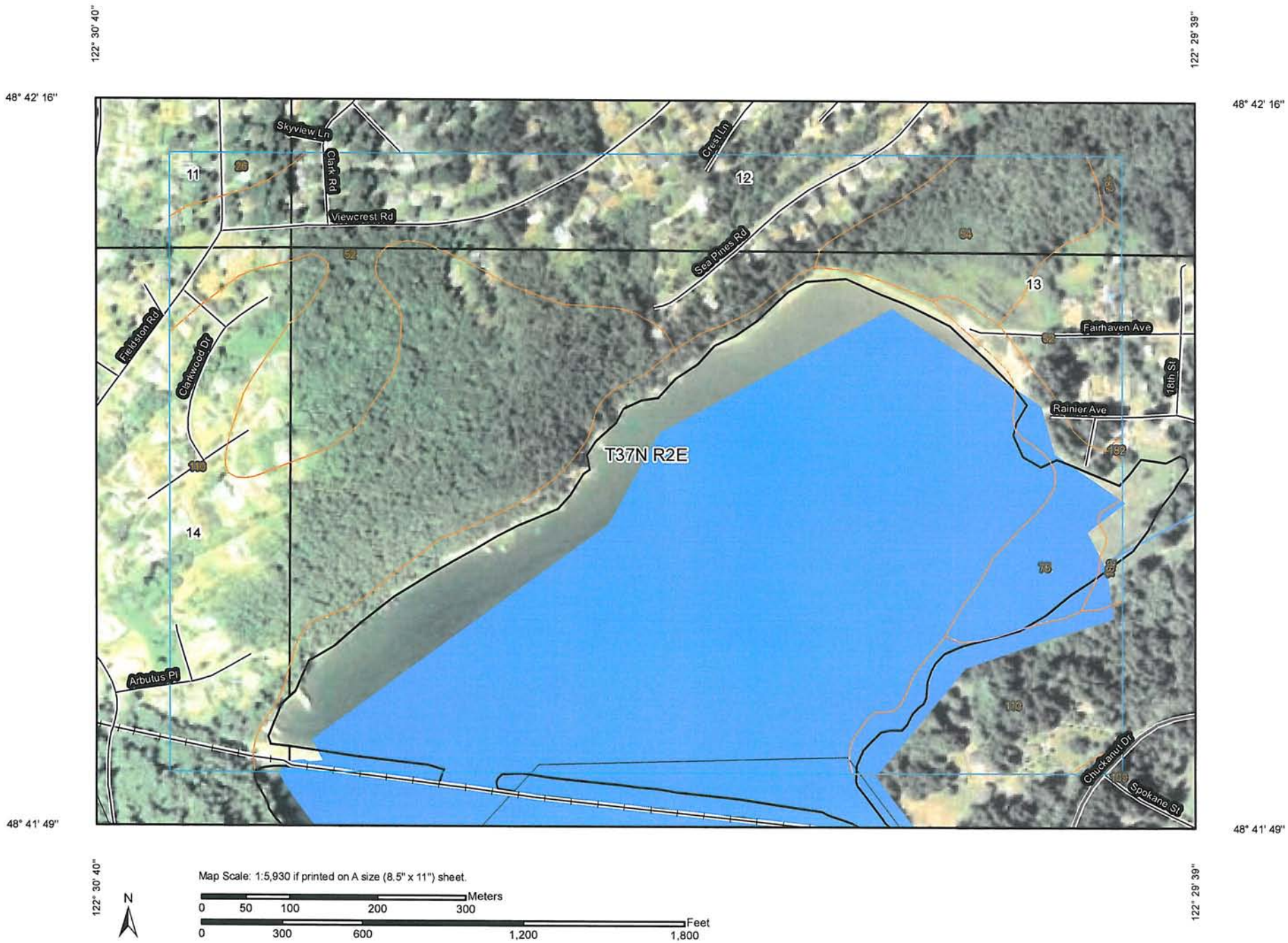
N

Scale: 1:13,363

Map center: 48° 42' 3" N, 122° 30' 11" W

This map is a user generated static output from an Internet mapping site and is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. THIS MAP IS NOT TO BE USED FOR NAVIGATION.

Soil Map—Whatcom County Area, Washington



APPENDIX A:
WETLAND DETERMINATION DATA FORMS

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

Project Site: Jones - Edgemoor City/County: Bellingham Sampling Date: 4-Dec-2009
Applicant/Owner: Jones State: WA Sampling Point: 1
Investigator(s): E.Binney Section, Township, Range: 13-37N-2E
Landform (hillslope, terrace, etc.): slope Local relief (concave, convex, none): none Slope (%): ≥30%
Subregion (LRR): A Lat: 48-20-10N Long: 122-30-25W Datum: NAD 83
Soil Map Unit Name: 110-Nati loam,, 30 to 60% slopes NWI classification: NA
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ☐ (If no, explain in Remarks.)
Are Vegetation ☐, Soil ☐, Or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes X No ☐
Are Vegetation ☐, Soil ☐, Or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks: **Parcel predominantly slopes of 30% or greater w/some lower percent areas**

VEGETATION – Use scientific names of plants

Tree Stratum (Plot Size: **10m radius**)	Absolute % Cover	Dominant Species?	Indicator Status
1. ***Pseudotsuga menziesii***	35	yes	FACU
2. ***Acer macrophyllum***	15	yes	FACU
3. ***Salix scouleriana***	10	no	FAC
4. ***Taxus brevifolia***	03	no	UPL
	63	= Total Cover	
Sapling/Shrub Stratum (Plot Size: **3m radius**)			
1. ***Gaultheria shallon***	80	yes	FACU
2. ***Corylus cornuta***	10	no	FACU
3. ***Mahonia nervosa***	10	no	FACU
4 ***Holodiscus discolor***	10	no	UPL
5. ***Rosa gymnocarpa***	03	no	FACU
	113	= Total Cover	
Herb Stratum (Plot Size: **1m X 1m**)			
1. ***Polystichum munitum***	05	yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	05	= Total Cover	
Woody Vine Stratum (Plot Size: **3m radius**)			
1.			
2.			
		= Total Cover	
% Bare Ground in Herb Stratum			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	**0**	(A)
Total Number of Dominant Species Across All Strata:	**4**	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	**0%**	(A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

No	Dominance Test is >50%
NA	Prevalence Index is ≤3.0[1]
NA	Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
NA	Wetland Non-Vascular Plants[1]
NA	Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? **Yes ☐ No X**

Remarks: **50**

Project Site: Jones-Edgemoor

SOIL

Sampling Point: 1

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (Moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 2/2	100					sandy loam	
10-11	10YR 3/2	100					sandy gravelly loam	

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

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

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

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type:

Depth (Inches):

Hydric Soils Present? **Yes** ☐ **No** X

Remarks: bedrock, sandstone, @ 11"

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes	☐	No	X	Depth (inches):
Water Table Present?	Yes	☐	No	X	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes	☐	No	X	Depth (inches):

Wetland Hydrology Present? **Yes** ☐ **No** X

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:	Jones - Edgemoor	City/County:	Bellingham	Sampling Date:	4-Dec-2009
Applicant/Owner:	Jones		State: WA	Sampling Point:	2
Investigator(s):	E.Binney	Section, Township, Range:	13-37N-2E		
Landform (hillslope, terrace, etc.):	slope	Local relief (concave, convex, none):	none	Slope (%):	≥30%
Subregion (LRR):	A Lat: 48-20-10N	Long:	122-30-25W	Datum:	NAD 83
Soil Map Unit Name:	110-Nati loam,, 30 to 60% slopes		NWI classification:	NA	

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

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes X No ☐

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

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

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

Remarks: **Parcel predominantly slopes of 30% or greater w/some lower percent areas**

VEGETATION – Use scientific names of plants

Tree Stratum (Plot Size: **10m radius**)	Absolute % Cover	Dominant Species?	Indicator Status
1. ***Acer macrophyllum***	50	yes	FACU
2. ***Pseudotsuga menziesii***	40	yes	FACU
3. ***Salix scouleriana***	10	no	FAC
4.			
	100	= Total Cover	
Sapling/Shrub Stratum (Plot Size: **3m radius**)			
1. ***Holodiscus discolor***	25	yes	UPL
2. ***Vaccinium parvifolium***	10	yes	UPL
3. ***Gaultheria shallon***	10	yes	FACU
4.			
5.			
	45	= Total Cover	
Herb Stratum (Plot Size: **1m X 1m**)			
1. ***Polystichum munitum***	25	yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	25	= Total Cover	
Woody Vine Stratum (Plot Size: **3m radius**)			
1.			
2.			
		= Total Cover	

% Bare Ground in Herb Stratum **50**

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	**0**	(A)
Total Number of Dominant Species Across All Strata:	**6**	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	**0%**	(A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

No	Dominance Test is >50%
NA	Prevalence Index is ≤3.0[1]
NA	Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
NA	Wetland Non-Vascular Plants[1]
NA	Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? **Yes** ☐ **No** **X**

Remarks:

Project Site: Jones-Edgemoor

SOIL

Sampling Point: 2

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (Moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 2/2						sandy loam	
6-18+	10YR 3/2						gravelly sand loam	

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

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

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

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type:

Depth (Inches):

Hydric Soils Present? **Yes** ☐ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes	☐	No	X	Depth (inches):
Water Table Present?	Yes	☐	No	X	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes	☐	No	X	Depth (inches):

Wetland Hydrology Present? **Yes** ☐ **No** X

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:	Jones - Edgemoor	City/County:	Bellingham	Sampling Date:	4-Dec-2009
Applicant/Owner:	Jones		State: WA	Sampling Point:	3
Investigator(s):	E.Binney	Section, Township, Range:	13-37N-2E		
Landform (hillslope, terrace, etc.):	slope	Local relief (concave, convex, none):	none	Slope (%):	≥30%
Subregion (LRR):	A Lat: 48-20-10N	Long:	122-30-25W	Datum:	NAD 83
Soil Map Unit Name:	110-Nati loam,, 30 to 60% slopes		NWI classification:	NA	

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

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes X No ☐

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

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

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

Remarks: **Parcel predominantly slopes of 30% or greater w/some lower percent areas. Plot on top of cliff along shoreline within relatively level area.**

VEGETATION – Use scientific names of plants

Tree Stratum (Plot Size: **10m radius**)	Absolute % Cover	Dominant Species?	Indicator Status
1. ***Pseudotsuga menziesii***	85	yes	FACU
2. ***Arbutus menziesii***	10	no	UPL
3.			
4.			
	95	= Total Cover	
Sapling/Shrub Stratum (Plot Size: **3m radius**)			
1. ***Gaultheria shallon***	90	yes	FACU
2. ***Holodiscus discolor***	10	no	UPL
3. ***Amelanchier ainifolia***	10	no	FACU
4.			
5.			
	110	= Total Cover	
Herb Stratum (Plot Size: **1m X 1m**)			
1. ***Pteridium aquilinum***	10	yes	FACU
2. ***Rubus ursinus***	05	yes	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	15	= Total Cover	
Woody Vine Stratum (Plot Size: **3m radius**)			
1.			
2.			
		= Total Cover	

% Bare Ground in Herb Stratum **25**

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	**0**	(A)
Total Number of Dominant Species Across All Strata:	**4**	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	**0%**	(A/B)

Prevalence Index worksheet:

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

Hydrophytic Vegetation Indicators:

No	Dominance Test is >50%
NA	Prevalence Index is ≤3.0[1]
NA	Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
NA	Wetland Non-Vascular Plants[1]
NA	Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? **Yes** ☐ **No** **X**

Remarks:

Project Site: Jones-Edgemoor

SOIL Sampling Point: 3

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (Moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3.5	NA						duff	
3.5-8	2.5Y 5/1	100					silty loam	
8-20+	10YR 3/4						silty loam	bed rock deeper than 20"

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

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

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

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type:

Depth (Inches):

Hydric Soils Present? **Yes** ☐ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes	☐	No	X	Depth (inches):
Water Table Present?	Yes	☐	No	X	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes	☐	No	X	Depth (inches):

Wetland Hydrology Present? **Yes** ☐ **No** X

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:	Jones - Edgemoor	City/County:	Bellingham	Sampling Date:	4-Dec-2009
Applicant/Owner:	Jones		State: WA	Sampling Point:	4
Investigator(s):	E.Binney		Section, Township, Range:	13-37N-2E	
Landform (hillslope, terrace, etc.):	slope	Local relief (concave, convex, none):	none	Slope (%):	≥30%
Subregion (LRR):	A Lat: 48-20-10N	Long:	122-30-25W	Datum:	NAD 83
Soil Map Unit Name:	110-Nati loam,, 30 to 60% slopes		NWI classification:	NA	

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

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes X No ☐

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

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

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

Remarks: **Parcel predominantly slopes of 30% or greater w/some lower percent areas. Plot on hillslope, west of Plot 3.**

VEGETATION – Use scientific names of plants

Tree Stratum (Plot Size: **10m radius**)	Absolute % Cover	Dominant Species?	Indicator Status
1. ***Pseudotsuga menziesii***	70	yes	FACU
2. ***Arbutus menziesii***	20	no	UPL
3. ***Prunus emarginata***	10	no	FACU
4. ***Salix scouleriana***	10	no	FAC
	110	= Total Cover	
Sapling/Shrub Stratum (Plot Size: **3m radius**)			
1. ***Mahonia nervosa***	55	yes	FACU
2. ***Holodiscus discolor***	30	yes	UPL
3. ***Rosa gymnocarpa***	05	no	FACU
4.			
5.			
	90	= Total Cover	
Herb Stratum (Plot Size: **1m X 1m**)			
1. ***Polystichum munitum***	20	yes	FACU
2. ***Rubus ursinus***	05	yes	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	25	= Total Cover	
Woody Vine Stratum (Plot Size: **3m radius**)			
1.			
2.			
		= Total Cover	

% Bare Ground in Herb Stratum **20**

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	**0**	(A)
Total Number of Dominant Species Across All Strata:	**5**	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	**0%**	(A/B)

Prevalence Index worksheet:

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

Hydrophytic Vegetation Indicators:

No	Dominance Test is >50%
NA	Prevalence Index is $\leq 3.0^1$
NA	Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
NA	Wetland Non-Vascular Plants[1]
NA	Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? **Yes** ☐ **No** X

Remarks:

Project Site: Jones-Edgemoor

SOIL

Sampling Point: 4

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (Moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1	NA						duff	
1-20+	10YR 2/2	100					sandy loam	

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

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

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

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type:

Depth (Inches):

Hydric Soils Present? **Yes** ☐ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes	☐	No	X	Depth (inches):
Water Table Present?	Yes	☐	No	X	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes	☐	No	X	Depth (inches):

Wetland Hydrology Present? **Yes** ☐ **No** X

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:	Jones - Edgemoor	City/County:	Bellingham	Sampling Date:	4-Dec-2009
Applicant/Owner:	Jones		State: WA	Sampling Point:	5
Investigator(s):	E.Binney	Section, Township, Range:	13-37N-2E		
Landform (hillslope, terrace, etc.):	slope	Local relief (concave, convex, none):	none	Slope (%):	≥30%
Subregion (LRR):	A Lat: 48-20-10N	Long:	122-30-25W	Datum:	NAD 83
Soil Map Unit Name:	110-Nati loam,, 30 to 60% slopes		NWI classification:	NA	

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

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes X No ☐

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

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

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

Remarks: **Parcel predominantly slopes of 30% or greater w/some lower percent areas. Plot near top of hill within/bowl possible old/historic quarry/barrow pit.**

VEGETATION – Use scientific names of plants

Tree Stratum (Plot Size: **10m radius**)	Absolute % Cover	Dominant Species?	Indicator Status
1. ***Alnus rubra***	25	yes	FAC
2. ***Acer macrophyllum***	20	yes	FACU
3. ***Betula papyrifera***	20	yes	FAC
4. ***Pseudotsuga menziesii***	20	yes	FACU
	85	= Total Cover	
Sapling/Shrub Stratum (Plot Size: **3m radius**)			
1. ***Holodiscus discolor***	45	yes	UPL
2.			
3.			
4.			
5.			
		= Total Cover	
Herb Stratum (Plot Size: **1m X 1m**)			
1. ***Polystichum munitum***	55	yes	FACU
2. ***Carex hendersonii***	10	no	FAC
3. ***Rubus ursinus***	05	no	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	70	= Total Cover	
Woody Vine Stratum (Plot Size: **3m radius**)			
1.			
2.			
		= Total Cover	

% Bare Ground in Herb Stratum **10**

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	**2**	(A)
Total Number of Dominant Species Across All Strata:	**6**	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	**33%**	(A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

No	Dominance Test is >50%
NA	Prevalence Index is ≤3.0[1]
NA	Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
NA	Wetland Non-Vascular Plants[1]
NA	Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? **Yes** X **No** ☐

Remarks:

Project Site: Jones-Edgemoor

SOIL Sampling Point: 5

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (Moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-.5	NA						duff	
.5-12+	10YR 3/2	100					sandy loam	bedrock w/in 16"

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

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

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

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type:

Depth (Inches):

Hydric Soils Present? **Yes** ☐ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes	☐	No	X	Depth (inches):
Water Table Present?	Yes	☐	No	X	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes	☐	No	X	Depth (inches):

Wetland Hydrology Present? **Yes** ☐ **No** X

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: Jones - Edgemoor City/County: Bellingham Sampling Date: 4-Dec-2009
Applicant/Owner: Jones State: WA Sampling Point: 6
Investigator(s): E.Binney Section, Township, Range: 13-37N-2E
Landform (hillslope, terrace, etc.): slope Local relief (concave, convex, none): none Slope (%): ≥30%
Subregion (LRR): A Lat: 48-20-10N Long: 122-30-25W Datum: NAD 83
Soil Map Unit Name: 110-Nati loam,, 30 to 60% slopes NWI classification: NA
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ☐ (If no, explain in Remarks.)
Are Vegetation ☐, Soil ☐, Or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes X No ☐
Are Vegetation ☐, Soil ☐, Or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks: **Parcel predominantly slopes of 30% or greater w/some lower percent areas. Plot at north end of parcel near Vewcrest road.**

VEGETATION – Use scientific names of plants

Tree Stratum (Plot Size: **10m radius**)	Absolute % Cover	Dominant Species?	Indicator Status
1. ***Acer macrophyllum***	80	yes	FACU
2. ***Thuja plicata***	20	no	FAC
3. ***Alnus rubra***	05	no	FAC
4. ***Abies grandis***	01	no	FACU
	106	= Total Cover	
Sapling/Shrub Stratum (Plot Size: **3m radius**)			
1. ***Symphoricarpos albus***	25	yes	FACU
2. ***Oemleria cerasiformis***	20	yes	FACU
3. ***Acer circinatum***	05	no	FAC
4. ***Holodiscus discolor***	05	n0	UPL
5.			
	55	= Total Cover	
Herb Stratum (Plot Size: **1m X 1m**)			
1. ***Polystichum munitum***	30	yes	FACU
2. ***Urtica dioica***	15	yes	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	45	= Total Cover	
Woody Vine Stratum (Plot Size: **3m radius**)			
1.			
2.			
		= Total Cover	

% Bare Ground in Herb Stratum **10**

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	**1**	(A)
Total Number of Dominant Species Across All Strata:	**5**	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	**20%**	(A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

No	Dominance Test is >50%
NA	Prevalence Index is ≤3.0[1]
NA	Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
NA	Wetland Non-Vascular Plants[1]
NA	Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? **Yes** X **No** ☐

Remarks:

Project Site: Jones-Edgemoor

SOIL Sampling Point: 6

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (Moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 3/2	100					silty loam	
10-20	10YR 4/3	100					gravelly silty loam	

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

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

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

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type:

Depth (Inches):

Hydric Soils Present? **Yes** ☐ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes	☐	No	X	Depth (inches):
Water Table Present?	Yes	☐	No	X	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes	☐	No	X	Depth (inches):

Wetland Hydrology Present? **Yes** ☐ **No** X

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:	Jones – Edgemoor	City/County:	Bellingham	Sampling Date:	4-Dec-2009
Applicant/Owner:	Jones		State: WA	Sampling Point:	7
Investigator(s):	E.Binney		Section, Township, Range:	13-37N-2E	
Landform (hillslope, terrace, etc.):	slope	Local relief (concave, convex, none):	none	Slope (%):	≥30%
Subregion (LRR):	A Lat: 48-20-10N	Long:	122-30-25W	Datum:	NAD 83
Soil Map Unit Name:	110-Nati loam,, 30 to 60% slopes		NWI classification:	NA	

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

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes X 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	X	No	☐					
Hydric Soil Present?	Yes	X	No	☐	**Is the Sampling Area within a Wetland?**	**Yes**	X	**No**	☐
Wetland Hydrology Present?	Yes	X	No	☐					

Remarks: **Parcel predominantly slopes of 30% or greater w/some lower percent areas. Plot located in**

VEGETATION – Use scientific names of plants

Tree Stratum (Plot Size: **10m radius**)	Absolute % Cover	Dominant Species?	Indicator Status
1. ***Alnus rubra***	30	yes	FAC
2.			
3.			
4.			
	30	= Total Cover	
Sapling/Shrub Stratum (Plot Size: **3m radius**)			
1. ***Rubus spectabilis***	30	yes	FAC
2.			
3.			
4.			
5.			
	30	= Total Cover	
Herb Stratum (Plot Size: **1m X 1m**)			
1. ***Equisetum telmateia***	30	yes	FACW
2. ***Athyrium filix-femina***	10	yes	FAC
3. ***Epilobium ciliatum***	10	yes	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	50	= Total Cover	
Woody Vine Stratum (Plot Size: **3m radius**)			
1.			
2.			
		= Total Cover	

% Bare Ground in Herb Stratum **20**

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	**5**	(A)
Total Number of Dominant Species Across All Strata:	**5**	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	**100%**	(A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

Yes	Dominance Test is >50%
NA	Prevalence Index is ≤3.0[1]
NA	Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
NA	Wetland Non-Vascular Plants[1]
NA	Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? **Yes** X **No** ☐

Remarks:

Project Site: Jones-Edgemoor

SOIL

Sampling Point: 7

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (Moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 2/1	100					sandy silt loam	
10-16+	2.5Y 4/2	80	10YR 4/4	20	C	M	gravelly silt loam	too sat. for accurate profile desc. below 16"

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

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

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

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type:

Depth (Inches):

Hydric Soils Present? **Yes** X **No** ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes	☐	No	☐	Depth (inches):	1-3"
Water Table Present?	Yes	☐	No	☐	Depth (inches):	surface
Saturation Present? (includes capillary fringe)	Yes	☐	No	☐	Depth (inches):	surface

Wetland Hydrology Present? **Yes** X **No** ☐

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:	Jones - Edgemoor	City/County:	Bellingham	Sampling Date:	4-Dec-2009
Applicant/Owner:	Jones		State: WA	Sampling Point:	8
Investigator(s):	E.Binney	Section, Township, Range:	13-37N-2E		
Landform (hillslope, terrace, etc.):	slope	Local relief (concave, convex, none):	none	Slope (%):	≥30%
Subregion (LRR):	A Lat: 48-20-10N	Long:	122-30-25W	Datum:	NAD 83
Soil Map Unit Name:	110-Nati loam,, 30 to 60% slopes		NWI classification:	NA	

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

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes X No ☐

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

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

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

Remarks: **Parcel predominantly slopes of 30% or greater w/some lower percent areas. Plot near top of slope @ north above WL.**

VEGETATION – Use scientific names of plants

Tree Stratum (Plot Size: **10m radius**)	Absolute % Cover	Dominant Species?	Indicator Status
1. ***Salix scouleriana***	70	yes	FAC
2. ***Alnus rubra***	15	no	FAC
3.			
4.			
	85	= Total Cover	
Sapling/Shrub Stratum (Plot Size: **3m radius**)			
1. ***Synphoricarpos albus***	40	yes	FACU
2. ***Rubus procerus***	05	no	FACU
3. ***Holodiscus discolor***	05	no	UPL
4. ***Thuja plicata***	01	no	FAC
5.			
	51	= Total Cover	
Herb Stratum (Plot Size: **1m X 1m**)			
1. ***Polystichum munitum***	25	yes	FACU
2. ***Rubus ursinus***	15	yes	FACU
3. ***Pteridium aquilinum***	10	yes	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	50	= Total Cover	
Woody Vine Stratum (Plot Size: **3m radius**)			
1.			
2.			
		= Total Cover	

% Bare Ground in Herb Stratum **25**

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	**5**	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	**40%**	(A/B)

Prevalence Index worksheet:

	Total % Cover of:		Multiply by:	
OBL species	**0**	x1 =	**0**	
FACW species	**0**	x2 =	**0**	
FAC species	**91**	x3 =	**273**	
FACU species	**100**	x4 =	**400**	
UPL species	**0**	x5 =	**0**	
Column Totals:	**191**	(A)	**673**	(B)

Prevalence Index = B/A = **3.5**

Hydrophytic Vegetation Indicators:

No	Dominance Test is >50%
No	Prevalence Index is ≤3.0[1]
NA	Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
NA	Wetland Non-Vascular Plants[1]
NA	Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? **Yes** ☐ **No** **X**

Remarks:

Project Site: Jones-Edgemoor

SOIL

Sampling Point: 8

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (Moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18+	10YR 3/2	100					silt loam	

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

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

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

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type:

Depth (Inches):

Hydric Soils Present? **Yes** ☐ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes	☐	No	X	Depth (inches):
Water Table Present?	Yes	☐	No	X	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes	X	No		Depth (inches): 7.5"

Wetland Hydrology Present? **Yes** X **No**

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

Remarks: Saturation does not appear to reach surface for duration to meet wetland hydrology criteria nor to support hydrophytic veg and no hydric soil indicators

APPENDIX B:
WETLAND RATING FORMS

Wetland name or number _____

WETLAND RATING FORM – WESTERN WASHINGTON
Version 2 - Updated July 2006 to increase accuracy and reproducibility among users
Updated Oct 2008 with the new WDFW definitions for priority habitats

Name of wetland (if known): _____ Date of site visit: _____

Rated by_____ Trained by Ecology? Yes__No___ Date of training_____

SEC: ___ TWNSHP: ____ RNGE: ____ 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	
Score for Hydrologic Functions	
Score for Habitat Functions	
TOTAL score for Functions	

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**	
Bog		**Lake-fringe**	
Mature Forest		**Slope**	
Old Growth Forest		**Flats**	
Coastal Lagoon		**Freshwater Tidal**	
Interdunal			
None of the above		Check if unit has multiple HGM classes present	

Wetland name or number _____

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

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

The hydrogeomorphic classification groups wetlands into 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.

Classification of Wetland Units in 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 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 the only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.
NO – go to 3 **YES** – The wetland class is **Flats**

If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the entire wetland unit **meet 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) at least 20 acres (8 ha) in size;
___At least 30% of the open water area is deeper than 6.6 ft (2 m)?
NO – go to 4 **YES** – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the entire wetland unit **meet all** of the following criteria?
____The wetland is on a slope (*slope can be very gradual*),
____The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.
____The water leaves the wetland **without being impounded**?
NOTE: *Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3ft diameter and less than 1 foot deep).*
NO - go to 5 **YES** – The wetland class is **Slope**

5. Does the entire wetland unit **meet all** of the following criteria?

____ The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river

____ The overbank flooding occurs at least once every 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 during the year. *This means that any outlet, if present, is higher than the interior of the wetland.*

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

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

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

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM clases. 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 if 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** WATER QUALITY FUNCTIONS - Indicators that the wetland unit functions to improve water quality	**Points** (only 1 score per box)
S	**S 1. Does the wetland unit have the potential to improve water quality?**	*(see p.64)*
S	S 1.1 Characteristics of average slope of unit: Slope is1% or less *(a 1% slope has a 1 foot 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	
S	S 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic *(use NRCS definitions)* YES = 3 points NO = 0 points	
S	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 > ½ 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 ___**
S	**Total for S 1** *Add the points in the boxes above*	
S	**S 2. Does the wetland unit have the opportunity to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland. *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* — Grazing in the wetland or within 150ft — Untreated stormwater discharges to wetland — Tilled fields, logging, or orchards within 150 feet of wetland — Residential, urban areas, or golf courses are within 150 ft upslope of wetland — Other_____ **YES** multiplier is **2** **NO** multiplier is **1**	*(see p.67)* multiplier _____
S	**TOTAL - Water Quality Functions** Multiply the score from S1 by S2 ***Add score to table on p. 1***	

Comments

S	**Slope Wetlands** HYDROLOGIC FUNCTIONS - Indicators that the wetland unit functions to reduce flooding and stream erosion	**Points** (only 1 score per box)
	S 3. Does the wetland unit have the potential to reduce flooding and stream erosion?	*(see p.68)*
S	S 3.1 Characteristics of vegetation that reduce the velocity of surface flows during storms. *Choose the points appropriate for the description that best fit 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	
S	S 3.2 Characteristics of slope wetland that holds back small amounts of flood flows: The slope wetland has small surface depressions that can retain water over at least 10% of its area. YES points = 2 NO points = 0	
S	*Add the points in the boxes above*	
S	**S 4. Does the wetland have the opportunity to reduce flooding and erosion?** Is the wetland in a landscape position where the reduction in water velocity it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows? *Note which of the following conditions apply.* — Wetland has surface runoff that drains to a river or stream that has flooding problems — Other_____ *(Answer NO if the major source of water is controlled by a reservoir (e.g. wetland is a seep that is on the downstream side of a dam)* **YES** multiplier is **2** **NO** multiplier is **1**	*(see p. 70)* multiplier _____
S	**TOTAL - Hydrologic Functions** Multiply the score from S 3 by S 4 ***Add score to table on p. 1***	

Comments

Wetland name or number _____

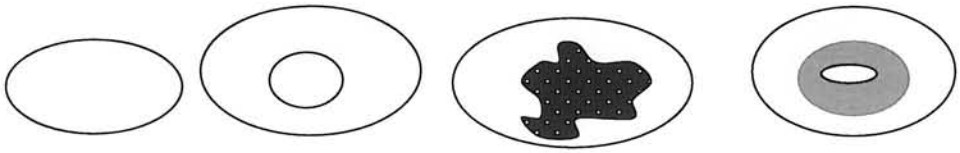
These questions apply to wetlands of all HGM classes. HABITAT FUNCTIONS - Indicators that unit functions to provide important habitat	**Points** (only 1 score per box)
H 1. Does the wetland unit have the <u>potential</u> to provide habitat for many species?	
H 1.1 <u>Vegetation structure</u> ***(see p. 72)***	**Figure ___**
Check the types of vegetation classes present (as defined by Cowardin)- Size threshold for each class is ¼ acre or more than 10% of the area if unit is smaller than 2.5 acres.	
____Aquatic bed	
____Emergent plants	
____Scrub/shrub (areas where shrubs have >30% cover)	
____Forested (areas where trees have >30% cover)	
If the unit has a forested class check if:	
____The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon	
Add the number of vegetation structures that qualify. If you have:	
4 structures or more points = 4	
Map of Cowardin vegetation classes — 3 structures points = 2	
2 structures points = 1	
1 structure points = 0	
H 1.2. <u>Hydroperiods</u> ***(see p. 73)***	**Figure ___**
Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ acre to count. (see text for descriptions of hydroperiods)	
____Permanently flooded or inundated — 4 or more types present points = 3	
____Seasonally flooded or inundated — 3 types present points = 2	
____Occasionally flooded or inundated — 2 types present point = 1	
____Saturated only — 1 type present points = 0	
____ Permanently flowing stream or river in, or adjacent to, the wetland	
____ Seasonally flowing stream in, or adjacent to, the wetland	
____ ***Lake-fringe wetland* = 2 points**	
____***Freshwater tidal wetland* = 2 points** Map of hydroperiods	
H 1.3. <u>Richness of Plant Species</u> ***(see p. 75)***	
Count the number of plant species in the wetland that cover at least 10 ft^2. (*different patches of the same species can be combined to meet the size threshold)*	
You do not have to name the species.	
Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle	
If you counted: > 19 species points = 2	
List species below if you want to: 5 - 19 species points = 1	
< 5 species points = 0	

Total for page _____

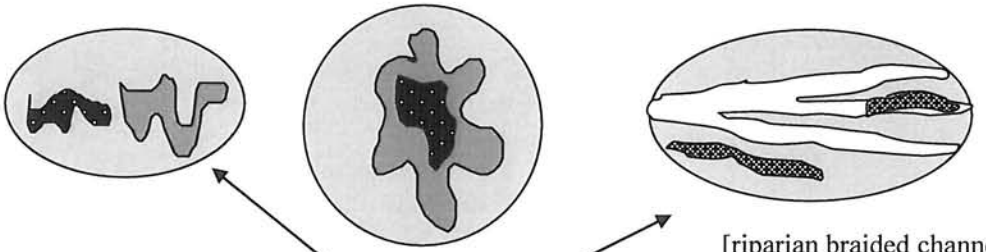
H 1.4. Interspersion of habitats *(see p. 76)*

Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.

Figure ___



None = 0 points Low = 1 point Moderate = 2 points



High = 3 points [riparian braided channels]

NOTE: If you have four or more classes or three vegetation classes and open water the rating is always "high". Use map of Cowardin vegetation classes

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

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

____Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long).

____Standing snags (diameter at the bottom > 4 inches) in the wetland

____Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft (10m)

____Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)*

____At least ¼ acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated. *(structures for egg-laying by amphibians)*

____ Invasive plants cover less than 25% of the wetland area in each stratum of plants

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

H 1. TOTAL Score - potential for providing habitat
Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5

Comments

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

Total for page_____

H 2.3 Near or adjacent to other priority habitats listed by WDFW ***(see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report http://wdfw.wa.gov/hab/phslist.htm)***

Which of the following priority habitats are within 330ft (100m) of the wetland unit? *NOTE: the connections do not have to be relatively undisturbed.*

____**Aspen Stands:** Pure or mixed stands of aspen greater than 0.4 ha (1 acre).

____**Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report p. 152*).

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

____**Old-growth/Mature forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age. (Mature forests) Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest.

____**Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158*).

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

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

____**Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.

____ **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report: pp. 167-169 and glossary in Appendix A).*

____**Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.

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

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

____**Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 51 cm (20 in) in western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30 cm (12 in) in diameter at the largest end, and > 6 m (20 ft) long.

If wetland has **3 or more** priority habitats = **4 points**
If wetland has **2** priority habitats = **3 points**
If wetland has **1** priority habitat = **1 point** 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)

H 2.4 Wetland Landscape *(choose the **one** description of the landscape around the wetland that best fits)* ***(see p. 84)*** There are at least 3 other wetlands within ½ 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 ½ mile points = 5 There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed points = 3 The wetland is Lake-fringe on a lake **with** disturbance and there are 3 other lake-fringe wetland within ½ mile points = 3 There is at least 1 wetland within ½ mile. points = 2 There are no wetlands within ½ mile. points = 0	
H 2. TOTAL Score - opportunity for providing habitat *Add the scores from H2.1,H2.2, H2.3, H2.4*	
TOTAL for H 1 from page 14	
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	

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.*	**Category**
SC 1.0 Estuarine wetlands *(see p. 86)* Does the wetland unit meet the following criteria for Estuarine wetlands? — The dominant water regime is tidal, — Vegetated, and — With a salinity greater than 0.5 ppt. YES = Go to SC 1.1 NO ___	
SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? YES = Category I NO go to SC 1.2	**Cat. I**
SC 1.2 Is the wetland unit at least 1 acre in size and meets at least two of the following three conditions? YES = Category I NO = Category II — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp. are the only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category I. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual rating I/II**

SC 2.0 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 unit being rated in a Section/Township/Range that contains a Natural Heritage wetland? *(this question is used to screen out most sites before you need to contact WNHP/DNR)* S/T/R information from Appendix D ___ or accessed from WNHP/DNR web site ___ YES____ – contact WNHP/DNR (see p. 79) and go to SC 2.2 NO ___ SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as or as a site with state threatened or endangered plant species? YES = Category I NO ____not a Heritage Wetland	**Cat. I**
SC 3.0 Bogs *(see p. 87)* Does the wetland unit **(or any part of the unit)** meet both the criteria for soils and vegetation in bogs? *Use the key below to identify if the wetland is a bog.* ***If you answer yes you will still need to rate the wetland based on its functions.*** 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 the soil profile? (See Appendix B for a field key to identify organic soils)? Yes - go to Q. 3 No - go to Q. 2 2. Does the unit 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 Q. 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 Q. 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. *1.* 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)?* 2. YES = Category I No___ Is not a bog for purpose of rating	**Cat. I**

SC 4.0 Forested Wetlands ***(see p. 90)*** Does the wetland unit have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? *If you answer yes you will still need to rate the wetland based on its functions.* — **Old-growth forests**: (west of Cascade crest) Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm) or more. NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter. — **Mature forests**: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have average diameters (dbh) exceeding 21 inches (53cm); crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth. YES = Category I NO ___not a forested wetland with special characteristics	**Cat. I**
SC 5.0 Wetlands in Coastal Lagoons ***(see p. 91)*** Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? — The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks — The lagoon in which the wetland is located contains surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)* YES = Go to SC 5.1 NO___ not a wetland in a coastal lagoon SC 5.1 Does the wetland meets all of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of invasive plant species (see list of invasive species on p. 74). — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland is larger than 1/10 acre (4350 square feet) YES = Category I NO = Category II	**Cat. I** **Cat. II**

SC 6.0 Interdunal Wetlands *(see p. 93)* Is the wetland unit west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? YES - go to SC 6.1 NO __ not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its functions.*** In practical terms that means the following geographic areas: • Long Beach Peninsula- lands west of SR 103 • Grayland-Westport- lands west of SR 105 • Ocean Shores-Copalis- lands west of SR 115 and SR 109 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is once acre or larger? YES = Category II NO – go to SC 6.2 SC 6.2 Is the unit between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III	**Cat. II** **Cat. III**
Category of wetland based on Special Characteristics *Choose the "highest" rating if wetland falls into several categories, and record on p. 1.* If you answered NO for all types enter "Not Applicable" on p.1	

JONES FAMILY TRUST
EDGEMOOR PROPERTY BIOLOGICAL CRITICAL AREAS RECONNAISSANCE & DELINEATION REPORT
BELLINGHAM, WASHINGTON

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