Technical Memorandum

To:	**Rob Bair (CenturyLink)**
From:	**Maki Dalzell (HDR)** **Lisa Danielski, PWS (HDR)**
cc:	**Mike Blanchette (HDR)** **Bonnie Lindner (HDR)** **Rich Lasinski (Mountain Limited)**
Date:	**November 9, 2011**
Subject:	**City of Bellevue Critical Areas Report** **CenturyLink – Pacific Bioscience Labs Permit Compliance** **Bellevue Case Number 11-114522**

1.0 Introduction

Project Background

On February 24, 2011, at the direction of Qwest Communications (now known as CenturyLink), a sub contractor retrofitted an existing copper cable pedestal located on the northeast corner of parcel #5453300180 (City of Bellevue, Washington) with a new 264TA utility hand hole in order to upgrade the existing CenturyLink services with fiber optic cable. The new service is provided to Pacific Bioscience Labs, which is located at 13222 SE 30 Street in Bellevue, Washington (parcel #5453300182).

On February 28, 2011, CenturyLink Right-of-Way (ROW) Department performed a survey of the hand hole and confirmed the original joint trench conduit placed by the builder for the adjacent parcel owner was, in fact, encroaching into parcel #5453300180, addressed as 13300 SE 30 Street, Bellevue, Washington (Figure 1). The CenturyLink ROW Department has since reached out to the parcel owner to proceed with an agreeable easement contract.

On Friday June 24, 2011, the City of Bellevue (City) contacted CenturyLink to investigate the ownership of the new vault and CenturyLink's intentions for the new hand hole. On June 30, 2011, CenturyLink received a "Request for Voluntary Compliance" letter from the City as the City had determined that the activities associated with installation of the new 264TA vault required a construction permit and a protected areas review. At the request of CenturyLink, HDR Engineering, Inc. investigated the subject property on September 16, 2011.

This memorandum documents the results of our site investigation to identify and delineate any areas that could be classified as wetland or wetland buffer on the subject property, determine the type and extent of wetland and buffer vegetation, and provide a vegetation restoration plan for critical areas.

Project Location

The project is located at 13300 SE 30 Street in Bellevue, Washington (Section 10, Township 24 North, Range 5 East). The subject property is approximately 1.36 acre in size and is primarily developed with an office building and a paved parking lot, except at the northeast corner of the parcel where it is currently undeveloped. The new 264TA vault is located at the north end of the property boundary. Figure 2 shows the location of the new vault.

2.0 Methods

The field investigation included two steps. The first step was a review of existing documents such as City and King County wetland and stream inventories, wetland and stream reports for adjacent properties, and other environmental documents. The second step was a field investigation of the site.

Document Review

The following existing documents were reviewed prior to beginning the field work:

- Soil Survey of King County Area, Washington (USDA NRCS 2011)
- National Wetland Inventory maps (http://www.fws.gov/wetlands/data/Mapper.html - accessed 9/16/2011)
- King County GIS (IMAP http://www.metrokc.gov/gis/mapportal/iMAP_main.htm – accessed 9/16/2011)
- City of Bellevue Interactive Map (NW Map http://www.nwmaps.net/ - accessed 9/20/2011)
- City of Bellevue Sensitive Areas Notebook (City of Bellevue 1987)
- Bellevue Critical Areas Updated Wetland Inventory (City of Bellevue 2003a)
- Bellevue Critical Areas Updated Stream Inventory (City of Bellevue 2003b)
- DRAFT Wetland Map from the Sunset Creek/Richards Creek Flood Control and Habitat Improvement Phase III Project (Cross 2011)
- Washington State Department of Natural Resources (WDNR) Natural Heritage Information Request Self-Service System (WDNR 2011)
- Washington State Department of Fish and Wildlife (WDFW) Priority Habitat Species on the Web (WDFW 2011)
- Aerial photographs (Pictometry 2011)

Field Methods

HDR biologists conducted a site visit on September 16, 2011. The field investigation included the identification of streams and wetlands in the project vicinity. Existing habitat conditions and wildlife use were also assessed on the subject parcel.

The subject parcel and the adjacent parcel were evaluated for the presence of wetland indicators using the methods described in the *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory 1987), as updated by the *Western Mountains, Valleys and Coast Region Regional Supplement* (U.S. Army Corps of Engineers 2010). Areas were identified as wetlands if they demonstrated the necessary plants, hydrologic conditions, and soils. Sample data plots were collected to determine the presence of

wetland indicators in the project area. Data plot locations were marked in the field using a Trimble Geo XT 2005 handheld GPS device, which is capable of sub-meter accuracy. A detailed description of the field methods used in this study is provided in Attachment 1.

The City requires that wetlands be rated using the state wetland rating system as described in *Washington State Wetland Rating System for Western Washington – Revised, Washington State Department of Ecology Publication # 04-06- 025* (Hruby 2004). Using this system, wetlands were rated in the field by using the Wetlands Rating Field Data Form provided with the rating system manual (Attachment 3). Based on their ratings, buffer widths were also assigned to wetlands.

Areas within the delineated wetlands and adjacent buffers were also investigated for presence of a stream channel and evidence of recently cleared vegetation (i.e., freshly-cut stumps or stalks) in the project vicinity.

3.0 Findings

Wetlands

No wetlands were observed within the subject parcel; however, HDR biologists identified one wetland located immediately east of the project area on the privately-owned parcel (Parcel # 5453300162). The wetland, identified as Wetland A, is situated in a topographic depression, approximately 4 to 5 feet below the elevation of the project area and adjacent buildings (Figure 2). Wetland delineation data sheets and site photographs are provided in Attachment 2 and Attachment 4.

Wetland A is a riverine wetland that is associated with East Creek and is located approximately 4 to 5 feet east of the new vault. It is approximately 3.1 acres in size surrounded by office buildings and paved parking lots. According to the City of Bellevue's interactive map (2011), East Creek flows through the wetland, approximately 300 feet north of the project area (Figure 1). Figure 2 shows the approximate wetland boundary and sample data plot locations for Wetland A.

Wetland A is primarily dominated by black twinberry (*Lonicera involucrata*), vine maple (*Acer circinatum*), red-osier dogwood (*Cornus sericea*), and English ivy (*Hedera helix*). Pacific willow (*Salix lasiandra*), Douglas spirea (*Spiraea douglasii*), slough sedge (*Carex obnupta*), giant horsetail (*Equisetum telmateia*) and wax currant (*Ribes divaricatum*) are also observed in the wetland.

Soils in Wetland A are mapped as Urban land (Snyder 1973). The soil profile within 17 inches of the surface consists of 11 inches of very dark gray (10YR 3/1) sandy loam with redoximorphic features over at least 7 inches of dark gray (2.5Y 4/1) sandy loam with redoximorphic features. The soils in Wetland A meet the hydric soil indicators for Depleted Below Dark Surface.

Primary indicators of hydrology were not observed in Wetland A during the field investigation. However, based on the presence of hydrophytic vegetation and hydric soils, the landscape setting of the site in a valley, and the observation of nearby wetlands with similar topographic settings, wetland hydrology is assumed to be present.

Wetland A is rated as a Category II wetland per the Ecology rating system. Wetland A received moderate scores for water quality (20/32 points), hydrologic (26/32 points), and habitat (18/36 points) functions. Wetland A has some potential to provide water quality and hydrologic functions because it has woody vegetation and depressions that can trap sediment and detain water from East Creek during a flood event. Wetland A has the opportunity to reduce flooding and erosion since East Creek is reported to have frequent flooding issues. Surrounding land use also provides opportunity for Wetland A to perform water quality functions. Wetland A has moderate potential and opportunity for habitat function, as it has some habitat diversity and interspersion.

Wetland Buffer

The City of Bellevue requires a standard 75-foot buffer for Category II wetlands with water quality scores of less than 24 points and habitat scores of less than 20 points (LUC 20.25H.095C). However, due to surrounding structures and paved parking lots, the actual buffer for Wetland A will be less than the standard 75-foot buffer and only extends up to the undeveloped area at the northeast corner of the subject parcel (Figure 2).

The 2006 aerial photographs depict that the undeveloped area was fenced and appeared to be used as a storage area for metal scraps. At the time of the field investigation, it was noted that the fence and metal scraps had been removed.

The buffer of Wetland A is primarily composed of non-native species such as Himalayan blackberry (*Rubus procerus*), English ivy, narrow-leaf plantain (*Plantago lanceolata*), chickory (*Cichorium intybus*), curly dock (*Rumex crispus*), Queen Anne's lace (*Daucus carota*), disc mayweed (*Matricaria discoidea*), velvet grass (*Holcus lanatus*,) and white clover (*Trifolium repens*). Along the edge of Wetland A and at the east end of the subject parcel, a narrow band of forested area with black cottonwood (*Populus balsamifera*) and Oregon ash (*Fraxinus latifolia*) is observed. At the north end of the parcel, a row of juniper (*Juniperus* spp.) hedges and one Douglas-fir (*Pseudotsuga menziesii*) stand are also present. Chunks of concrete and highly compacted fill materials appear to be in place throughout the undeveloped area. Because of the presence of impenetrable materials on the surface, soils were not formally sampled in this area.

Streams

There are no defined bed and banks identified within the wetland during the field investigation. No stream channels are located in the immediate vicinity of the project. As described above, East Creek flows east to west approximately 300 feet north of the project area (Figure 1).

Wildlife

Because the project is relatively small in size, and the area has been disturbed by human activities in the past, the project area is unlikely used as primary habitat for any protected species. There is no habitat for species of local importance identified during the field investigation, and no state or federally listed species are documented to occur in the project vicinity (WDFW 2011).

4.0 Project Impacts

The City (2006) regulates all development, use, land alteration, and other activities within critical areas and critical areas buffer (LUC 20.25H.050). The new vault installed as a result of the project is located in the wetland buffer area and considered an impact to the wetland buffer. According to the City's land use code, modifications to the wetland buffer may be allowed by buffer averaging (LUC 20.25H.095C.2.a) or through a critical areas report (LUC 20.25H.230).

The footprint of the new vault measured in the field is approximately 72 square feet. Cleared vegetation was likely the non-native herbaceous species, ornamental juniper, and some Himalayan blackberry, which were observed in the remaining undeveloped buffer area during the field investigation. No impacts from the operation of the facility are anticipated; therefore, the project will have no cumulative impacts to the wetland buffer. Wetland A is not affected as a result of the project.

Brush piles were observed in the buffer area on the September 16, 2011, site visit, but there were no tree stumps observed in the project vicinity. The project may have trimmed the juniper hedge and limbed some trees during the construction; however, no trees appeared to be removed from the project area.

5.0 Buffer Restoration Plan

A buffer restoration plan has been prepared to offset the impacts described above on the subject property. Approximately 100 square feet of the wetland buffer area would be planted with native shrub species suitable for the site conditions. The proposed planting area is located at the northeast corner of the subject parcel and on the fringe of the deciduous forested area (Figures 2 and 3). As mentioned above, the wetland buffer area is primarily vegetated with non-native herbaceous species, Himalayan blackberry, and currently lacks native vegetation. Table 1 provides the species, size, spacing, and quantities proposed for installation.

Table 1. Buffer Restoration Area Plant Schedule

Common Name	Scientific Name	Min. Size	Spacing (feet on Center)	Quantity
Snowberry	*Symphoricarpos albus*	2 gallon	4'	4
Tall Oregon grape	*Berberis aquifolium*	2 gallon	4'	5

The goals and objectives, minimum performance standards, monitoring plan, and contingency plan proposed for this project are described in the following sections. CenturyLink and its subcontractors would be responsible for the implementation of this restoration plan.

5.1 Goals and Objectives, and Performance Standards

The overall goal of the proposed enhancement is to increase wetland buffer functions such as improving wildlife habitat, screening the wetland from nearby human activities, and increasing sediment filtration and water temperature regulation of overland runoff. The project also meets all the performance standards that are specified in the land use code (LUC 20.25H.100).

Goal 1: Increase Habitat Functions on the wetland buffer area

Objective:

1A. Plant native shrub species in 100 square feet of wetland buffer that is lacking native vegetation.

Performance Standards:

1A1. The Project Biologist shall supervise the installation of plantings, and confirm that plants have been installed in quantities and species specified in plans.

1A2. Monitor plants to ensure appropriate survival rates.

- Areas shall meet the survival performance standards for native plants as noted below:
  - Year 1: 100 percent survival of planted stock.
  - Years 2 through 3: minimum of 80 percent survival of planted stock.
  - Desirable native volunteers may be included in plant counts.

5.2 Monitoring Plan

The planted area would be monitored to demonstrate compliance with applicable permits and to evaluate the establishment and maintenance of the plant community within the restored area. The monitoring phase of the project is expected to consist of iterative and corrective measures, such as removing invasive species, and is expected to occur up until a point when planted native shrub species dominate the area. This goal would be initiated by careful plant selection, established by monitoring for plant health and survival, and then ensured by documenting progress.

Monitoring would continue at the planted area for a minimum of 3 years after construction or until the City concurs that site conditions have returned to a naturalized state. The mitigation goal would be considered achieved when the project team and City agree that plants have become well established and can be expected to survive and self-maintain the area. The exact length of time required for monitoring of the project is determined both through regulatory requirements and by the growth of the plants themselves. If the area becomes covered with native plants, and there are no foreseeable issues from invasive plants and human disturbance, monitoring would become unnecessary. If performance standards are not met in Year 3, monitoring would occur again in Year 4. If third-year performance standards are not met in Year 4, monitoring would occur in Year 5 to provide final documentation of the restoration site conditions.

The monitoring period would commence from the month that the installation is approved. Overview photos would be taken from the same vantage points each year to document overall appearance of the mitigation area before, during, and after construction. Plant

survivorship would be defined as fully healthy and thriving (see below). Monitoring field visits would take place during the growing season of each monitoring year. A monitoring memo would be submitted to the City by the end of each calendar year.

The monitoring memo would include the following components:

1. A description of the site and the monitoring schedule
2. A discussion of the restoration objectives
3. A discussion of the methods used
4. A results section with a summary of plant survivorship and an evaluation of the site with regard to the performance standards
5. Conclusion, including management recommendations, and maintenance and contingency measures if necessary
6. Site photographs

A summary of plant survivorship would list the number and vigor of the planted shrubs. Plants would be considered "dead" when more than 50% of the plant is decadent. The monitoring memo would also list other factors that could affect survival and eventual dominance of the planted material, such as animal herbivory, insect infestation, human disturbance, inadequate growing conditions, disease, or other factors.

5.3 Contingency Plan

Information from the annual monitoring effort would be used to identify the need for maintenance or corrective action. If problems are encountered during monitoring, the first step would be to identify the reason for the problem, then to implement an appropriate corrective or maintenance action. These actions would be documented in annual monitoring reports. Contingency measures are provided listed in Table 2.

Table 2. Contingency Measures

Problem	Contingency Measures
Site does not meet plant survivorship requirements	• Evaluate reasons for mortality (e.g. poor soil conditions, insufficient moisture, incorrect planting, browsing by wildlife, vandalism). • Address cause for mortality and replant to exceed survivorship requirements (contractor is responsible for replacing plant materials that die in the first year). • Provide protective measures (e.g. rodent fencing, deer repellent, weeding, etc.), if appropriate. • Initiate or modify irrigation practices, if necessary.
Over-competition by invasive species (more than 30% cover in the mitigation area)	• Evaluate predominant invasive species in the restoration areas • Initiate invasive species control protocols appropriate to species type, conditions of infestation area (wetland or buffer), and level of infestation (e.g., herbicide application, mowing, etc.)

6.0 Decision Criteria Compliance

The following identifies and demonstrates the project compliance with the decision criteria listed in the land use code.

LUC 20.25H.255.B – Decision Criteria

1. The proposal includes plans for restoration of degraded critical area or critical area buffer functions which demonstrate a net gain in overall critical area or critical area buffer functions.

Response: On-site wetland buffer enhancement mitigation is proposed along the forested area at the northeast corner of the subject parcel. Approximately 100 square feet of the currently degraded wetland buffer area will be planted with native shrub species. This enhancement plan will provide improvements to the wetland buffer functions relative to the existing condition.

2. The proposal includes plans for restoration of degraded critical area or critical area buffer functions which demonstrate a net gain in the most important critical area or critical area buffer functions to the ecosystem in which they exist.

Response: Although the proposed enhancement plan will provide improvements to the wetland buffer functions, due to the small scale of the project impact, the proposed restoration plan will be considered negligible to demonstrate a net gain of the overall functions and values that the wetland and wetland buffer areas currently provide at a drainage basin scale.

3. The proposal includes a net gain in stormwater quality function by the critical area buffer or by elements of the development proposal outside of the reduced regulated critical area buffer.

Response: A net gain in stormwater function is expected to be achieved through planting with native shrubs species, which would help to reduce sediment and pollutant transport to the wetland.

4. Adequate resources to ensure completion of any required restoration, mitigation and monitoring efforts.

Response: A monitoring plan will ensure that the proposed enhancement plantings will be monitored and successfully established within a minimum of 3 years after the installation.

5. The modifications and performance standards included in the proposal are not detrimental to the functions and values of critical area and critical area buffers off-site.

Response: The project area is surrounded by commercial buildings and paved parking lots. The undeveloped portion of the wetland buffer is in a degraded condition due to the past activities in the area. The 72-square-foot disturbance to the wetland buffer is not detrimental to functions and values that the wetland and wetland buffer currently provide.

6. The resulting development is compatible with other uses and development in the same land use district.

Response: The project is compatible with adjacent properties and surrounding development within the same land use district (LI).

7.0 References

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Figure 1
Project Vicinity Map

0 100 200 300 400 500 Feet

Legend

Parcel

Bellevue Stream Inventory

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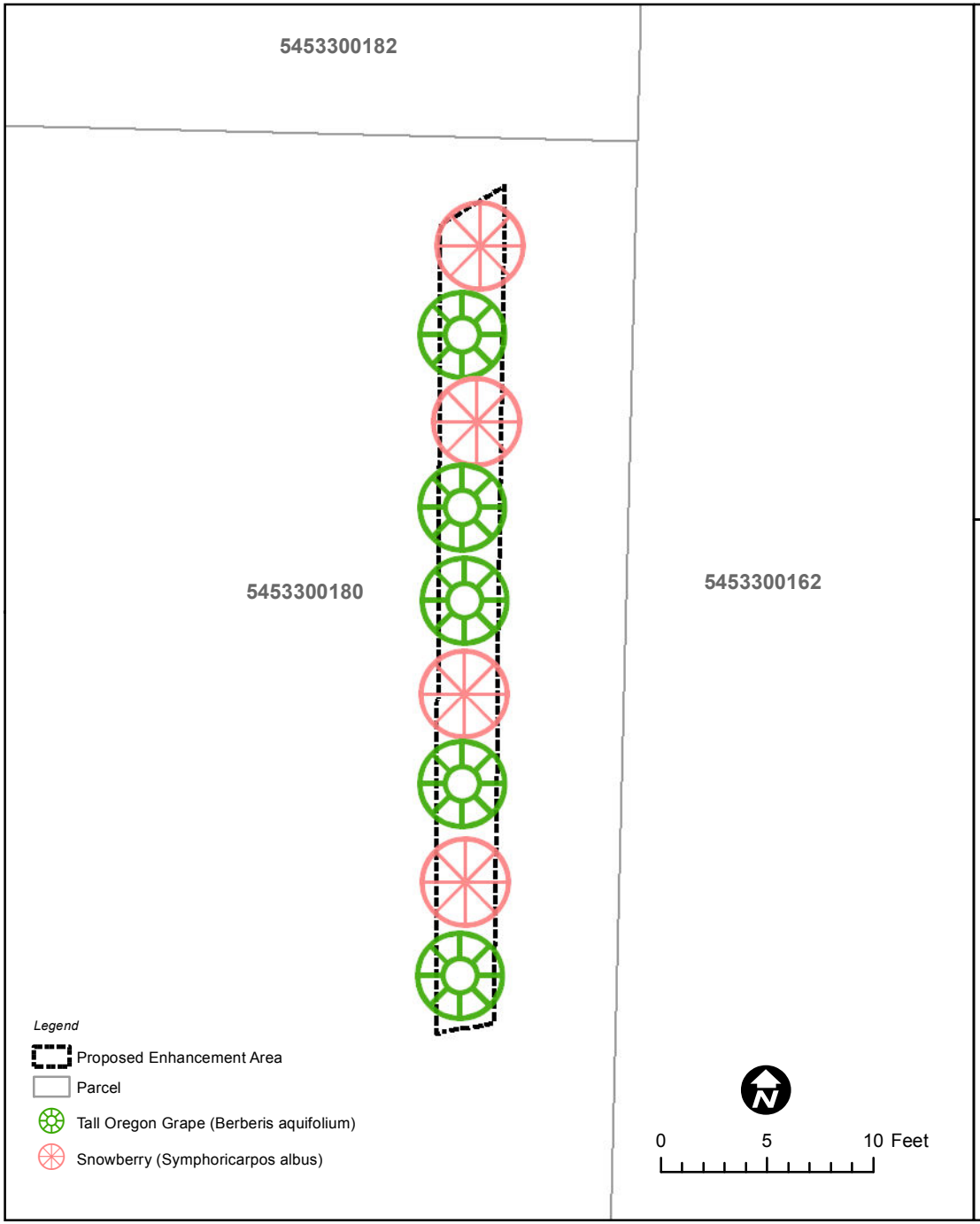
Legend

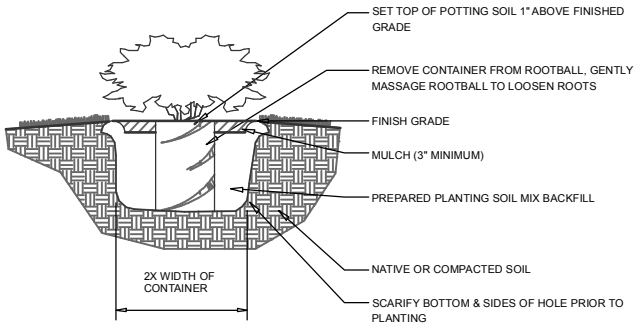
- Sample Plot Location
- Wetland Boundary (Delineated September 16, 2011)
- 3-foot Contour
- Approximate Wetland Boundary
- 75-foot Buffer
- Proposed Enhancement
- Project Area
- Parcel
- Photo Point

0 10 20 30 Feet

Figure 2
Critical Areas and Proposed Enhancement Areas in Project Vicinity

CenturyLink, Inc. - Pacific Science Labs Permit Compliance





A1 SHRUB PLANTING DETAIL

NTS

PLANTING SCHEDULE

QUANTITY	BOTANICAL NAME	COMMON NAME	SIZE & CONDITION	SPACING
4	SYMPHORICARPOS ALBUS	SNOWBERRY	2 GALLON CONT.	4' ON CENTER
5	BERBERIS AQUIFOLIUM	TALL OREGON GRAPE	3 GALLON CONT.	4' ON CENTER
9	TOTAL			

PLANTING NOTES:

1. PLANTING OF CONTAINERIZED PLANTS IS TO OCCUR DURING THE COOL SEASON MONTHS (OCT 1 - MARCH 31). OTHER PLANTING TIMES MUST HAVE PRIOR AUTHORIZATION FROM THE BIOLOGIST.

2. SELECTED PLANTS AND PLANTING ACTIVITIES SHALL CONFORM WITH THE CODE OF STANDARDS OF THE AMERICAN ASSOCIATION OF NURSERYMEN. PLANT MATERIALS TO BE USED WILL BE NATIVE TO THE PACIFIC NORTHWEST.

3. NURSERY GROWN PLANTS SHALL BE PLUGS OR CONTAINERIZED, SOUND, HEALTHY, VIGOROUS PLANS, FREE OF DEFECTS, DISEASE, AND INFESTATION. THE PROJECT BIOLOGIST CAN SUPPLY A LIST OF NURSERIES KNOWN TO CARRY NATIVE PLANTS. THE PROJECT BIOLOGIST WILL REVIEW PLANT MATERIALS PRIOR TO PLANTING TO VERIFY CONFORMANCE TO THE PLANT SCHEDULE AND TO PLANT CHARACTERISTICS AND RESERVES THE RIGHT TO REQUIRE REPLACEMENT OR SUBSTITUTION OF PLANTS THAT ARE DEEMED UNSUITABLE.

4. FERTILIZERS WILL NOT BE APPLIED.

5. PLANT MATERIAL LAYOUT TO BE COMPLETED BY THE CONTRACTOR AND APPROVED BY THE PROJECT BIOLOGIST PRIOR TO INSTALLATION OF PLANTS. PLANT MATERIAL MAY NOT BE INSTALLED PRIOR TO THE WRITTEN VERIFICATION AND APPROVAL OF THE BIOLOGIST.

6. PLANTS TO BE DUG, PACKED, TRANSPORTED, AND HANDLED WITH CARE TO ENSURE PROTECTION FROM INJURY. STORE PLANTS IN THE MANNER NECESSARY TO CCOMMODATE THEIR HORTICULTURAL REQUIREMENTS. HEEL-IN PLANTS IF NECESSARY TO KEEP THEM FROM DRYING OUT. KEEP PLANTS SATURATED AND SHADED UNTIL THE ACTUAL TIME OF INSTALLATION. DO NOT LET THEM SIT IN THE SUN OR DRY DURING PLANTING.

7. EXISTING BUFFER SOIL STOCKPILED ON THE SITE SHALL BE USED FOR TOPSOIL AND PLANTING SOIL EQUIREMENTS.

8. EXCAVATE PLANT PITS WITH VERTICAL SIDES AND INSTALL PLANTS AS SHOWN ON THE PLANTING DETAILS. BACKFILL WITH NATIVE SOIL. AFTER PLANTING, IMMEDIATELY SATURATE THE PLANTS TO AVOID CAPILLARY STRESS.

9. ALL PLANT MATERIAL TO BE WARRANTED TO REMAIN ALIVE AND HEALTHY FOR A PERIOD OF ONE YEAR AFTER COMPLETION AND FINAL WRITTEN ACCEPTANCE OF PLANTING. DEAD OR UNHEALTHY PLANTS TO BE REPLACED PER PLANS AND SPECIFICATIONS DIRECTED BY THE ENGINEER.

Figure 3
Planting Plan, Schedules, and Details

ATTACHMENT 1: WETLAND DELINEATION METHODOLOGY

Wetlands are defined as areas saturated or inundated by surface or groundwater at a frequency and duration sufficient to support, and which under normal circumstances do support, a prevalence of vegetation adapted for life in saturated soil conditions. The methods used to delineate the on-site wetlands conform to methods in the U.S. Army Corps of Engineers Wetland Delineation Manual (Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (USACE 2010).

To be considered a wetland, an area must have hydrophytic vegetation, hydric soils, and wetland hydrology. HDR biologists collected data on these parameters in areas representative of typical site conditions. Additional data was collected in associated uplands, as needed, to confirm wetland and stream boundaries. Delineated wetland boundaries and wetland data plot locations in the study area were marked in the field using a Trimble GeoXT 2005 GPS device, which is capable of sub-meter accuracy.

Vegetation

The dominant plants and their wetland indicator status were evaluated to determine if the vegetation was hydrophytic. Hydrophytic vegetation is defined as vegetation adapted to wetland conditions. To meet the hydrophytic vegetation criterion, more than 50 percent of the dominant plants in each stratum must be Facultative, Facultative Wetland, or Obligate, based on the wetland indicator category assigned to each plant species by USFWS (Reed 1988, or current approved list). Table A-1 lists the definitions of the indicator categories.

Table A-1. Definitions of Wetland Plant Indicator Categories used to Determine the Presence of Hydrophytic Vegetation

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

Source: Reed (1988).

HDR biologists used *Plants of the Pacific Northwest Coast* (Pojar and MacKinnon 1994), and *Flora of the Pacific Northwest* (Hitchcock and Cronquist 1973) as field references to assist with plant identification. Scientific and common plant names follow currently accepted nomenclature. Most names are consistent with *Flora of the Pacific Northwest* (Hitchcock and Cronquist 1973) and the PLANTS Database (USDA NRCS 2011a). During the field investigation, biologists observed and recorded the dominant plant species on data sheets for each data plot.

Soils

Generally, an area must contain hydric soils to be a wetland. Hydric soil forms when soils are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper 12 inches. Biological activities in saturated soils result in reduced oxygen concentrations and organisms turn to anaerobic processes for metabolism. Over time, anaerobic biological processes result in certain soil color patterns, which are used as indicators of hydric soil. Typically, low-chroma colors are formed in the soil matrix, and bright-colored redoximorphic features form within the matrix. Other important hydric soil indicators include organic matter accumulations in the surface horizon, reduced sulfur odors, and organic matter staining in the subsurface (USDA NRCS 2011b).

HDR biologists examined the soils by excavating sample pits to a depth of 20 inches to observe soil profiles, colors, and textures. In some cases, a shallower soil pit was adequate to document hydric soil indicators. Munsell color charts (Gretag Macbeth Corporation 2009) were used to describe soil colors.

Hydrology

HDR biologists examined the area for evidence of hydrology. Wetland hydrology criteria were considered to be satisfied if it appeared that the soil was seasonally inundated or saturated to the surface for a consecutive number of days greater than or equal to 12.5 percent of the growing season (USACE 2010). The growing season generally begins when the soil reaches a temperature of 41 degrees Fahrenheit in the zone of root penetration or when certain indicators of plant biological activity are evident (USACE 2010). The growing season in the project area can be approximated using the long-term climatological data reported in WETS tables available from the USDA NRCS National Water and Climate Center (WETS Station: KENT, WA4169).

Wetland hydrology indicators are divided into two categories – primary and secondary indicators (USACE 2010). Primary indicators of hydrology include surface inundation, high water table, and saturated soils. The presence of one primary indicator is sufficient to conclude that wetland hydrology is present. If the absence of a primary indicator, observation of two or more secondary indicators is required to conclude that wetland hydrology is present. Secondary indicators of hydrology include drainage patterns, water-stained leaves, and geomorphic setting (USACE 2010).

ATTACHMENT 2: WETLAND DATA SHEETS

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

Project/Site: 13300 SE 30TH ST City/County: Bellevue/King Sampling Date: 9/16/2011
Applicant/Owner: CenturyLink/Harvey H Johnson State: WA Sampling Point: SP-1
Investigator(s): LD/MD Section, Township, Range: 10/T24N/R5E
Landform (hillslope, terrace, etc): Floodplain Local relief (concave, convex, none): Concave Slope (%):
Subregion (LRR): A Lat: 47.585001 Long: -122.16296 Datum: WGS1984
Soil Map Unit Name: Urban land NWI Classification: PSS1
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	**Is the Sampled Area within a Wetland?** **Yes** X **No**
Hydric Soil Present?	Yes X	No	
Wetland Hydrology Present?	Yes X	No	

Remarks: All three criteria are met; therefore the sample plot is not within a wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum Plot size:	Absolute % Cover	Dominant Species?	Indicator Status
1			
2			
3			
4			
	= Total Cover		

Sapling/Shrub Stratum Plot size:	Absolute % Cover	Dominant Species?	Indicator Status
1 *Acer circinatum*	5	N	FAC
2 *Lonicera involucrata*	20	Y	FAC
3 *Cornus stolonifera*	10	Y	FACW
4 *Ribes divaricatum*	5	N	FAC
5			
	40 = Total Cover		

Herb Stratum Plot Size:	Absolute % Cover	Dominant Species?	Indicator Status
1 *Equisetum telmateia*	5	Y	FACW
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
	5 = Total Cover		

Woody Vine Stratum Plot Size:	Absolute % Cover	Dominant Species?	Indicator Status
1 *Hedera Helix*	90	Y	NI
2			
	90 = Total Cover		

% Bare Ground in Herb Stratum

Dominance Test worksheet:

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

Prevalence Index worksheet:

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

Prevalence Index = B/A

Hydrophytic Vegetation Indicators:

- X Dominance Test is >50%
- ___ Prevalence Test is ≤ 3.0[1]
- ___ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
- ___ Wetland Non-Vascular Plants[1]
- ___ Problematic Hydrophitic 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: Dominance test meets hydrophytic vegetation criteria.

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

SOIL Sampling Point: **SP-1**

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-11	10YR 3/1	95	7.5YR 4/6	5	C	M	N/A	Impenetrable fill pad
11-17+	2.5Y 4/1	97	10YR 4/6	3	C	M		

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Indicators for Problematic Hydric Soils[3]:

- ___ 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 MLRA1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ 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 (inch ___

Hydric Soil Present? **Yes** X **No** ___

Remarks:

Soils were not formally sampled due to the presence of impenetrable layer.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of 1 required: check all that apply)

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

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**except MLRA 1,2,4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (C9)
- ___ 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): N/A
Water Table Present?	Yes ___	No X	Depth (inches): > 17"
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): > 17"

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

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

Remarks:

No primary indicators of wetland hydrology is present during the field investigation; however, based on the presence of hydrophytic vegetation and hydric soils, as well as the landscape setting of the site in a valley, wetland hydrology is assumed to be present at the sample plot.

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

Project/Site: 13300 SE 30TH ST City/County: Bellevue/King Sampling Date: 9/16/2011
Applicant/Owner: CenturyLink/Harvey H Johnson State: WA Sampling Point: SP-2
Investigator(s): LD/MD Section, Township, Range: 10/T24N/R5E
Landform (hillslope, terrace, etc): Floodplain Local relief (concave, convex, none): None Slope (%): ~3%
Subregion (LRR): A Lat: 47.585001 Long: -122.16296 Datum:
Soil Map Unit Name: Urban land NWI Classification: --
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 ___	**Is the Sampled Area within a Wetland?** **Yes** ___ **No** X
Hydric Soil Present?	Yes ___	No X	
Wetland Hydrology Present?	Yes ___	No X	

Remarks: Two out of three criteria are absent; therefore the sample plot is not within a wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum Plot size: ___	Absolute % Cover	Dominant Species?	Indicator Status
1 *Populus balsamifera*	75	Y	FAC
2 *Fraxinus latifolia*	10	N	FACW
3			
4			
	85 = Total Cover		

Sapling/Shrub Stratum Plot size: ___			
1 *Fraxinus latifolia*	5	Y	FACW
2			
3			
4			
5			
	5 = Total Cover		

Herb Stratum Plot Size: ___			
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
	___ = Total Cover		

Woody Vine Stratum Plot Size: ___			
1 *Hedera Helix*	90	Y	NI
2			
	90 = Total Cover		

% Bare Ground in Herb Stratum ___

Dominance Test worksheet:

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

Prevalence Index worksheet:

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

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%
___ Prevalence Test is ≤ 3.0[1]
___ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
___ Wetland Non-Vascular Plants[1]
___ Problematic Hydrophitic 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: Dominance test meets hydrophytic vegetation criteria.

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

SOIL Sampling Point: **SP-2**

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0>	Fill	100	--	--	--	--	N/A	Impenetrable fill pad

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Indicators for Problematic Hydric Soils[3]:

___ 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 MLRA1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ 2 cm Muck (A10) (**LRR B**)
___ 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: Fill pad

Depth (inches): ___

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

Soils were not formally sampled due to the presence of impenetrable layer.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of 1 required: check all that apply)

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

Secondary Indicators (2 or more required)

___ Water-Stained Leaves (B9) (**except MLRA 1,2,4A, and 4B**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Saturation Visible on Aerial Imagery (C9)
___ Geomorphic Position (C9)
___ 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): N/A

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:

No primary indicators of wetland hydrology are present in the sample plot.

ATTACHMENT 3: ECOLOGY RATING FORM

Wetland name or number A

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): A Date of site visit: 9/16/11

Rated by M. Dalzell / L. Danielski Trained by Ecology? Yes X No___ Date of training March 2007

SEC: 10 TWNSHP: 24N RNGE: 5E Is S/T/R in Appendix D? Yes___ No X

Map of wetland unit: Figure 2 Estimated size ~3.1 acres

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III X IV___

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

Score for Water Quality Functions	20
Score for Hydrologic Functions	26
Score for Habitat Functions	18
TOTAL score for Functions	64

Category based on SPECIAL CHARACTERISTICS of wetland

I___ II___ Does not Apply X

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

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

Wetland name or number A

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.		X
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).		X
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X
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.		X

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.

Wetland name or number A

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**

Wetland name or number A

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

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

Y 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 A

R	**Riverine and Freshwater Tidal Fringe Wetlands** WATER QUALITY FUNCTIONS - Indicators that wetland functions to improve water quality	**Points** (only 1 score per box)
R	**R 1. Does the wetland unit have the potential to improve water quality?**	*(see p.52)*
R	R 1.1 Area of surface depressions within the riverine wetland that can trap sediments during a flooding event: Depressions cover >3/4 area of wetland — points = 8 Depressions cover > 1/2 area of wetland — points = 4 If depressions > ½ of area of unit draw polygons on aerial photo or map Depressions present but cover < 1/2 area of wetland — points = 2 No depressions present — points = 0	Figure ___ 2
R	R 1.2 Characteristics of the vegetation in the unit (areas with >90% cover at person height): Trees or shrubs > 2/3 the area of the unit — points = 8 Trees or shrubs > 1/3 area of the unit — points = 6 Ungrazed, herbaceous plants > 2/3 area of unit — points = 6 Ungrazed herbaceous plants > 1/3 area of unit — points = 3 Trees, shrubs, and ungrazed herbaceous < 1/3 area of unit — points = 0 Aerial photo or map showing polygons of different vegetation types	Figure ___ 8
R	*Add the points in the boxes above*	10
R	**R 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 or orchards within 150 feet of wetland — A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging ✓ Residential, urban areas, golf courses are within 150 ft of wetland — The river or stream linked to the wetland has a contributing basin where human activities have raised levels of sediment, toxic compounds or nutrients in the river water above standards for water quality — Other _____ **YES** multiplier is **2** **NO** multiplier is **1**	*(see p.53)* multiplier 2
R	**TOTAL - Water Quality Functions** Multiply the score from R 1 by R 2 ***Add score to table on p. 1***	20

Comments

Wetland name or number A

R	**Riverine and Freshwater Tidal Fringe Wetlands** HYDROLOGIC FUNCTIONS - Indicators that wetland functions to reduce flooding and stream erosion	**Points** (only 1 score per box)
	R 3. Does the wetland unit have the potential to reduce flooding and erosion?	*(see p.54)*
R	R 3.1 Characteristics of the overbank storage the unit provides: *Estimate the average width of the wetland unit perpendicular to the direction of the flow and the width of the stream or river channel (distance between banks). Calculate the ratio: (average width of unit)/(average width of stream between banks).* If the ratio is more than 20 points = 9 If the ratio is between 10 – 20 points = 6 If the ratio is 5 - <10 points = 4 If the ratio is 1 - <5 points = 2 If the ratio is < 1 points = 1 Aerial photo or map showing average widths	Figure ___ 6
R	R 3.2 Characteristics of vegetation that slow down water velocities during floods: *Treat large woody debris as "forest or shrub". Choose the points appropriate for the best description.* (polygons need to have >90% cover at person height NOT Cowardin classes): Forest or shrub for >1/3 area OR herbaceous plants > 2/3 area points = 7 Forest or shrub for > 1/10 area OR herbaceous plants > 1/3 area points = 4 Vegetation does not meet above criteria points = 0 Aerial photo or map showing polygons of different vegetation types	Figure ___ 7
R	*Add the points in the boxes above*	13
R	**R 4. Does the wetland unit have the opportunity to reduce flooding and erosion?** Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. *Note which of the following conditions apply.* — There are human structures and activities downstream (roads, buildings, bridges, farms) that can be damaged by flooding. — There are natural resources downstream (e.g. salmon redds) that can be damaged by flooding — Other_____ *(Answer NO if the major source of water to the wetland is controlled by a reservoir or the wetland is tidal fringe along the sides of a dike)* **YES** multiplier is **2** **NO** multiplier is **1**	*(see p.57)* multiplier 2
R	**TOTAL - Hydrologic Functions** Multiply the score from R 3 by R 4 ***Add score to table on p. 1***	26

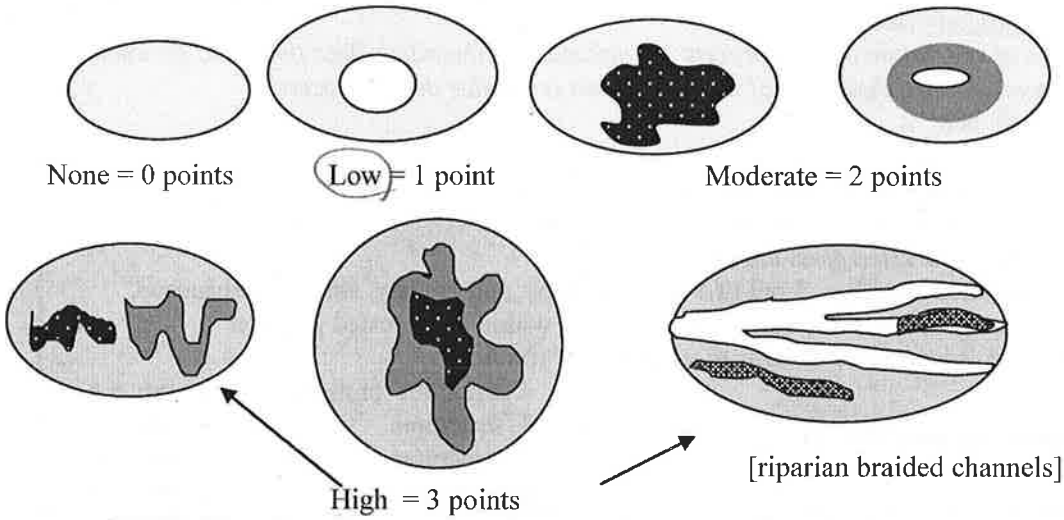
Comments

Wetland name or number A

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 potential to provide habitat for many species?	
H 1.1 Vegetation structure ***(see p. 72)*** *Check the types of vegetation classes present (as defined by Cowardin)- Size threshold for each class is ¼ acre or more than 10% of the area if unit is smaller than 2.5 acres.* ____Aquatic bed ____Emergent plants _X_Scrub/shrub (areas where shrubs have >30% cover) _X_Forested (areas where trees have >30% cover) *If the unit has a forested class check if:* _X_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 3 structures — points = 2 2 structures — points = 1 1 structure — points = 0 Map of Cowardin vegetation classes	Figure ___ 2
H 1.2. Hydroperiods ***(see p. 73)*** *Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or 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	Figure ___ 2
H 1.3. Richness of Plant Species ***(see p. 75)*** Count the number of plant species in the wetland that cover at least 10 ft^2. (*different patches of the same species can be combined to meet the size threshold)* *You do not have to name the species.* *Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle* If you counted: > 19 species — points = 2 *List species below if you want to:* 5 - 19 species — points = 1 < 5 species — points = 0	1

Total for page 5

Wetland name or number A

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.  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	**Figure ___** 1
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.* _X_ Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long). _X_ Standing snags (diameter at the bottom > 4 inches) in the wetland _X_ 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) _X_ 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.*	4
H 1. TOTAL Score - potential for providing habitat *Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5*	10

Comments

Wetland name or number A

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** X 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 ___** 0
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**	1

Total for page 1

Wetland name or number K

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*).

X **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*).

X **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.

X **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 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)

4

Wetland name or number A

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	3
H 2. TOTAL Score - opportunity for providing habitat *Add the scores from H2.1,H2.2, H2.3, H2.4*	8
TOTAL for H 1 from page 14	10
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	18

Wetland name or number A

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

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

Wetland Type *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*	**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 X	
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**

Wetland name or number A

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 X 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**

Wetland name or number A

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) X 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) X 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**

Wetland name or number A

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 X 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	N/A

ATTACHMENT 4: SITE PHOTOGRAPHS

Photo 1. New 264TA vault – photo taken from the edge of the pavement facing northeast

Photo 2. Wetland A facing north

Photo 3. Slough sedge dominated area in Wetland A

Photo 4. Western boundary of Wetland A in the project vicinity, facing north

Photo 5. Wetland buffer area facing towards Wetland A

Photo 6. Wetland buffer area facing south, photo taken from the new vault

Photo 7. Proposed enhancement area facing south

Photo 8. Proposed enhancement area facing north