# WETLAND DELINEATION, HABITAT ASSESSMENT, AND MITIGATION PLAN

## WESLEY HOMES - PUYALLUP SENIOR LIVING

**REVISED AUGUST 2015**

Soundview Consultants LLC

# WETLAND DELINEATION, HABITAT ASSESSMENT, AND MITIGATION PLAN

## WESLEY HOMES - PUYALLUP SENIOR LIVING

**REVISED AUGUST 28, 2015**

**PROJECT LOCATION**

707 39TH AVENUE SOUTHEAST
PUYALLUP, WASHINGTON 98374

**PREPARED FOR**

WESLEY HOMES
815 SOUTH 251TH STREET
DES MOINES, WASHINGTON 98198
(206) 870-1100

**PREPARED BY**

**SOUNDVIEW CONSULTANTS LLC**
2907 HARBORVIEW DRIVE
GIG HARBOR, WASHINGTON 98335
(253) 514-8952

Soundview Consultants LLC

# Executive Summary

Soundview Consultants LLC was hired by Wesley Homes (Applicant) to re-delineate and assess wetlands and other potentially regulated fish and wildlife habitat and assist with environmental planning efforts for the development of a 14.36-acre property located east of 5th Street Southeast at 707 39th Avenue Southeast in the City of Puyallup, Washington (Pierce County Tax Parcel Number 0419037014). The subject property is located in the Southwest ¼ of Section 03, Township 19 North, Range 04 East, and W.M. The proposed project is a master planned senior housing community that will provide senior housing, independent and assisted living quarters, roads, parks, and associated infrastructure within the City of Puyallup.

The subject property was investigated for the presence of potentially regulated wetlands, drainages, fish and wildlife habitat, and/or priority species in December of 2013. The purpose of the 2013 study was to verify the previously delineated wetland boundaries and other aquatic features as part of a site development planning and permitting actions for a future master planned senior housing community. Following careful project planning efforts, this assessment was expanded to include a wetland impact assessment and a conceptual mitigation plan.

Wetlands on the site were previously delineated by delineated by Jim Carsner, Professional Wetland Scientist (PWS) in 2006, as part of a larger proposed 28.7-acre commercial and senior living development (Carsner, revised 2008). The 2006 delineation was conducted to the 1987 wetland delineation standards, and the subsequent report identified four (4) wetlands and one (1) drainage channel. US Army Corps of Engineers (USACE) subsequently issued an Approved Jurisdictional Determination (JD) for the site that was valid for five years. In the Approved JD, USACE concluded that three of the on-site wetlands and what is now an adjacent ditch were waters of the U.S. The remaining wetland was determined to be isolated and not subject to Federal regulation under Section 404 of the Clean Water Act (CWA).

Using current wetland delineation methodology, a November 2013 preliminary site inspection determined that the current extent of the wetland boundaries is sufficiently different than those described in the revised 2008 report; thus requiring a re-delineation and assessment of all wetlands on the subject property. Subsequently, Soundview Consultants LLC environmental staff conducted a full wetland delineation and site assessment in December 2013. Changes include, but are not limited to, wetland plant status revisions for numerous plant species and changes in hydric soil determination protocols that were not included in prior assessment efforts. The 2013 site investigation identified a total of four wetlands identified as Wetlands A, B, C, and D. Three wetlands (Wetlands A, C, and D) were rated as Category IV wetlands; one wetland (Wetland B) was rated as a Category III wetland. The following wetland table summarizes the 2013 findings:

**Wetland Summary Table**

| Wetland | Size[1] (on-site) | Category / Type[2] | Regulated Under Puyallup Municipal Code (Chapter 21.06) | Regulated Under RCW 90.48 | Regulated Under Clean Water Act |
|---|---|---|---|---|---|
| **Wetland A** | 58,962 sf | IV (IV) | **Yes** | **Yes** | **Likely** |
| **Wetland B** | 5,638 sf | III (III) | **Yes** | **Yes** | **Not Likely** |
| **Wetland C** | 3,075 sf | IV (IV) | **Yes** | **Yes** | **Likely** |
| **Wetland D** | 510 sf | IV (IV) | **Yes** | **Yes** | **Likely** |

[1] On-site area only. On-site wetland areas are shown as square feet (sf).
[2] Current Washington Department of Ecology wetland rating methods and definitions. Puyallup Municipal Code 21.06 ratings shown in parentheses.

All of the wetlands are likely regulated under Puyallup Municipal Code (PMC) 21.06 and Revised Code of Washington (RCW) 90.48, consistent with the prior Approved JD. Wetlands A, C, and D, are likely regulated by the USACE, consistent with the prior Approved JD. Wetlands A and C have surface water connectivity to a drainage channel that has connection to Bradley Lake located to the west. Wetland D likely drains northwesterly through a ditch into a larger off-site wetland adjacent to Bradley Lake. Wetland B is identified as an isolated wetland, having no visible outlet or surface water connection to other aquatic features, and thus are likely not subject to regulation under Section 404 of the CWA. As Wetlands A, C, and D appear to have surface water connections to off-site Bradley Lake, which is a Water of the U.S., these wetlands are more likely to be subject to regulation under Section 404 of the CWA. However, in the interest of efficient project review, the USACE will be requested to process a Nationwide Permit (NWP) for fill placement within the wetlands.

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# Chapter 1. Introduction

Soundview Consultants LLC was retained by Wesley Homes (Applicant) to re-delineate and assess wetlands and other potentially regulated fish and wildlife habitat and assist with environmental planning efforts for the development of a 14.36-acre property located at 707 39th Avenue Southeast in the City of Puyallup, Washington (Pierce County Tax Parcel Number 0419037014). The subject property is located in the Southwest ¼ of Section 03, Township 19 North, Range 04 East, and W.M. The project proposes to develop a master planned senior housing community that will provide senior housing, independent and assisted living quarters, roads, parks, and associated infrastructure within the City of Puyallup.

Wetlands on the site were previously delineated by Jim Carsner, PWS, in 2006 as part of a larger proposed 28.7-acre commercial and senior living development (Carsner, revised 2008). The revised 2008 delineation was conducted to the 1987 wetland delineation standards, and the subsequent report identified four (4) wetlands and one (1) drainage channel. US Army Corps of Engineers (USACE) subsequently issued an Approved Jurisdictional Determination (JD) for the site that was valid for five years. Thus, verification of current site conditions is required to update standards. The initial purpose of this study was to verify the extent, condition, and potential regulatory status of the previously identified wetlands and aquatic features as part of the proposed site development efforts.

The 2013 site investigation included a re-delineation and assessment of on-site wetlands and other adjacent water features. The 2013 site investigation identified four (4) wetlands (Wetlands A, B, C, and D) and an off-site drainage ditch. This report provides conclusions and recommendations regarding:

- Site description, preliminary project descriptions, and area of assessment;
- Background research and identification of critical areas and habitats within the vicinity of the proposed project;
- Identification, re-delineation, and assessment of wetlands and potentially regulated aquatic features;
- Identification and assessment of fish and wildlife habitat and/or priority species located on or near the subject property;
- Standard buffer recommendations, building setbacks, and development limitations;
- Existing site map detailing identified critical areas and standard buffers;
- Supplemental information necessary for Federal, State, and Local regulatory review;
- Preliminary environmental planning guidance, and
- Draft mitigation plan.

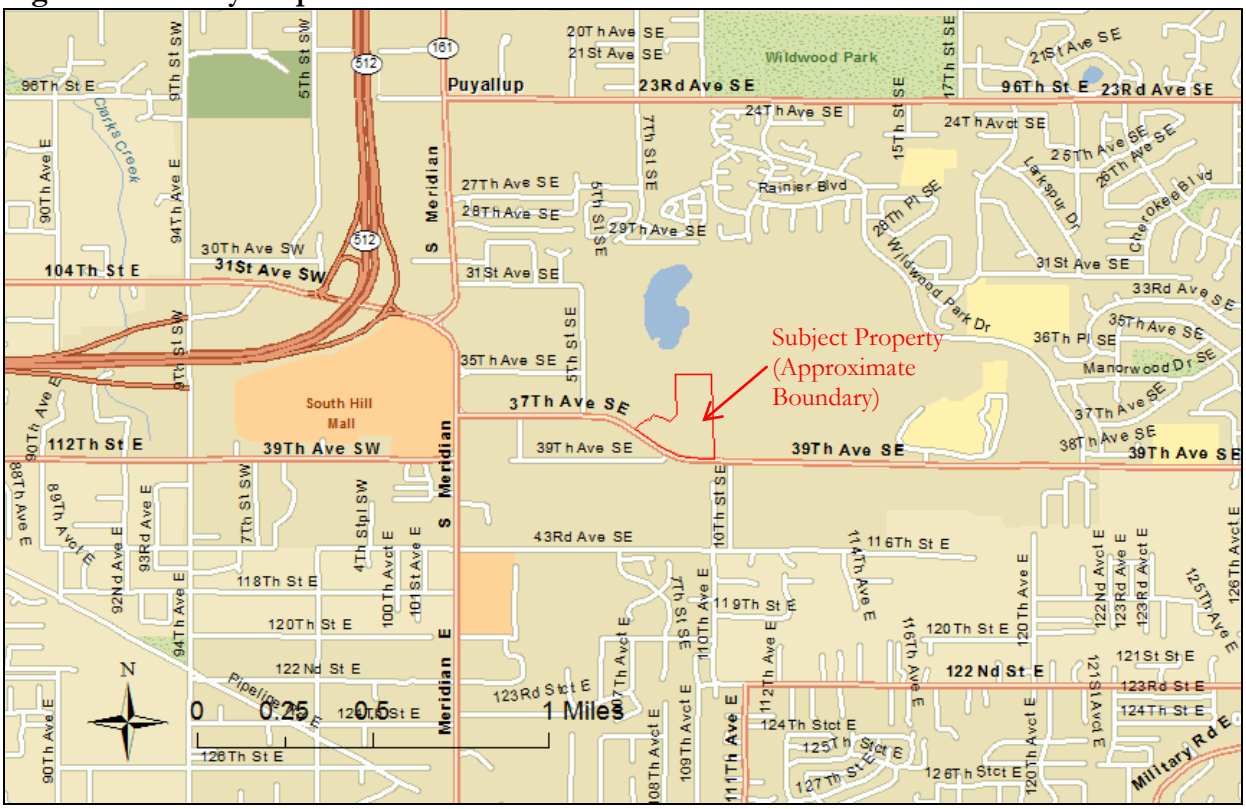
# Chapter 2. Property Description

## 2.1 Location

The subject property is located in the City of Puyallup near the intersection of South Meridian/Highway 161 and 37th Avenue Southeast at 707 39th Avenue Southeast. Southwest ¼ of Section 03, Township 19 North, Range 04 East, W.M. (Pierce County Tax Parcel Numbers 0419037014). A Pierce County tax parcel map of the subject property is presented in Appendix B.

To access the subject property from downtown Tacoma, via Interstate 5 northbound, take Exit 135 and merge onto State Route 167 toward Puyallup. Proceed six miles to a right turn onto North Meridian, which becomes South Meridian after 0.4 mile. After approximately 2.65 miles, turn left onto Meridian Avenue East/ Meridian South. Proceed 0.25 mile and turn left onto 37th Avenue Southeast. The property may be accessed from the southeast corner of the Lowe's complex.

**Figure 1. Vicinity Map**.



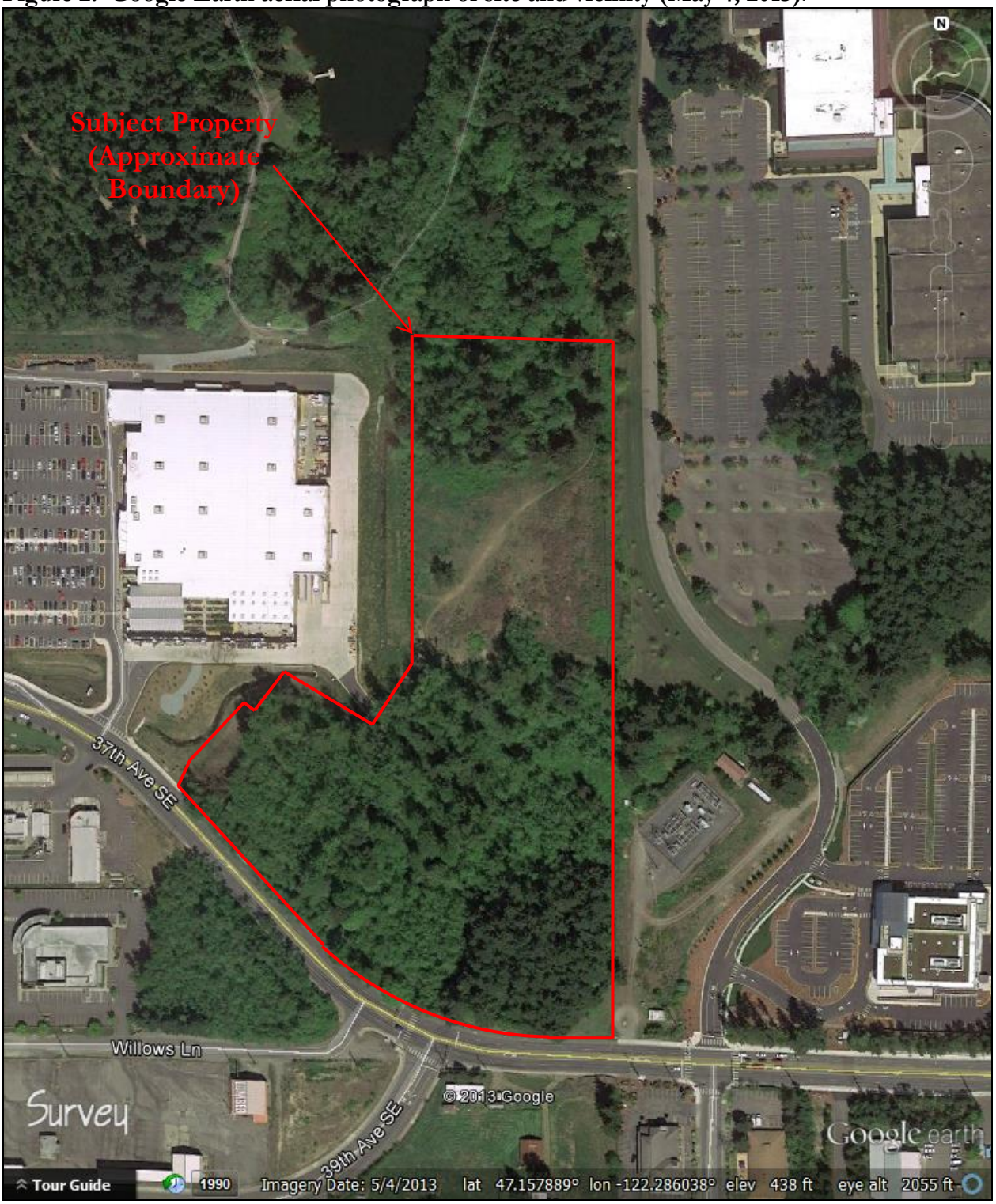

Source: ESRI (ArcGIS)

## 2.2 Site Conditions

The proposed project is located on an approximately 14.36-acre site. The subject property is undeveloped and dominated with a mixed deciduous and coniferous forest canopy on the south and north portions of the property, and a predominately herbaceous and shrub-scrub cover across the center of the property dominated by non-native invasive species such as Himalayan blackberry (*Rubus armeniacus*) and Scotch broom (*Cytisus scoparius*) (Figure 2). The forested patch on the northern portion of the property is approximately two acres in size and contains predominately big-leaf maple (*Acer macrophyllum*) and red alder (*Alnus rubra*) interspersed with large conifers, predominately western red cedar (*Thuja plicata*) and Douglas fir (*Pseudotsuga menziesii*). The approximately 9-acre forested area found on the southern portion of the property is composed of predominately Douglas fir and western red cedar with large patches of red alder intermixed.

The subject property is an infill area bounded on the north by the City of Puyallup's Bradley Lake Park. Adjacent parcels to the east contain an electric substation and an office complex with large parking facility. The southern boundary of the site abuts a road with low-density single-family residences in adjacent areas farther to the south. The west side of the subject property there is a Lowe's Home Improvement store, a gas station, and other commercial outlet warehouses. A drainage corridor, which was part of mitigation action for the Lowe's development, abuts the western property boundary.

**Figure 2. Google Earth aerial photograph of site and vicinity (May 4, 2013).**




Source: Google Earth

# Chapter 3. Methods

Wetlands, drainages, and other potentially regulated fish and wildlife habitat within the subject property were investigated and critical areas identified within 300 feet of the subject property were delineated and assessed by Soundview Consultants LLC staff on December 6 and 9 of 2013. All wetland determinations were made using observable vegetation, hydrology, and soils in conjunction with data from the U.S. Geographic Survey (USGS) topographic map, the Natural Resources Conservation Service (NRCS) Soil Survey, US Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI), Pierce County GIS data (PublicGIS), local precipitation data (NOAA) and various orthophotographic resources. Appendix C contains further details for the methods and tools used to prepare this report.

Wetland boundaries were determined using the routine approach described in the USACE's *Wetlands Delineation Manual* (Environmental Laboratory, 1987) and modified according to the guidelines established in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0)* (USACE, 2010).

On-site wetland boundaries were marked with orange surveyor's flagging, labeled alpha-numerically (e.g. A-x, B-x, etc.), and tied to vegetation along the wetland boundary. Pink surveyor's flagging was used to mark the points where detailed data was collected. Each data point flag was labeled numerically (e.g. DP-x) and tied at each sampling location. Additional tests pits were excavated at random intervals inside and outside of each wetland to further confirm wetland boundaries. The location of each data plot and wetland boundary flag were surveyed by Barghausen Consulting Engineers, Inc. immediately after delineation. Off-site wetland areas were identified through aerial photographic interpretation, "over the fence" visual observations where access was unavailable with an estimated boundary sketched onto the wetland map using on-site reference points, and dGPS geolocated data where limited off-site access was granted.

Wetlands were classified using both the hydrogeomorphic (Brinson, 1993) and Cowardin (Cowardin, 1979) classification systems, and assessed using the *Wetland Functions Characterization Tool for Linear Projects* (WSDOT, 2000). Following classification and assessment, all wetlands were rated and categorized using the *Washington State Wetlands Rating System for Western Washington – Revised* (Hruby, 2004) and guidelines established in the Puyallup Municipal Code (PMC) Chapter 21.06 – Critical Areas.

The fish and wildlife habitat assessment was conducted by qualified biologists during the same site visits. Publicly available background data was queried for documented wildlife observations and/or the presence of potentially regulated fish and wildlife habitat on or near the subject property. In addition, high-resolution aerial photography of the surrounding area was carefully examined. Visual observations using stationary and walking survey methods were utilized for both aquatic and upland habitats. Any special habitat features or signs of wildlife activity were noted, and these areas were thoroughly re-inspected during morning, midday, and evening hours.

# Chapter 4. Background

## 4.1 Previous Wetland and Habitat Assessments

A previous delineation and assessment effort identified four Palustrine wetlands, Wetlands A, B, C, and D. Wetlands A, B, and C occur entirely on-site; Wetland D occurs on-site but extends northward off-site toward Bradley Lake, via an off-site drainage ditch that was enhanced as part of a previous mitigation action for an adjacent site. Wetland A was identified as a Palustrine Forested (PFOB) wetland (Cowardin, 1977) dominated by red alder, and western red cedar over salmonberry *(Rubus spectabilis),* lady fem *(Athyrium filix-femina*), and skunk cabbage *(Lysichiton americanum*). Wetland B was identified as a Palustrine Scrub-Shrub (PSS) wetland with various willow *(Salix* spp.) and hardhack (*Spiraea douglasii*) as dominant plants species. Wetlands C and D were both identified as Palustrine Scrub-Shrub (PSS) wetlands and dominated by salmonberry, lady fern, and skunk cabbage. Two hydrogeomorphic (HGM) classes, depressional and slope, were identified on-site by the previous delineation. In association with the previous wetland delineation and assessment, the USACE issued an Approved JD in 2008 that determined Wetlands A, C, and D were regulated under Section 404 of the Clean Water Act (CWA). Wetland B was found to be isolated.

## 4.2 Topography and Drainage Basin

The surveyed topographic map of the subject property and USGS data of the surrounding area shows the land to generally have a slope of approximately 6 to 7 percent from the east down to the west before dropping steeply down to the off-site ditch. Elevations range from approximately 488 feet in at the southeast corner down to 435 feet along the banks of the landscaped ditch that marks the western edge of the property (Appendix B). Slopes increase to nearly 10 percent in the northern portions of the property. The City of Puyallup Drainage Basins and Streams map shows the entire property is in the State Highway Basin, a sub-basin to the Puyallup River approximately 2.5 miles to the north. See Appendix B for further details.

## 4.3 Local and National Wetland Inventories

The USFWS NWI map identifies one Palustrine Emergent Seasonally-Flooded (PEMC) wetland associated with the property. The Pierce County PublicGIS map identifies one wetland primarily on the adjacent property. The Puyallup Inventoried Wetlands and Streams map identifies four (4) field-verified wetlands on the property. A copy of the USFWS NWI map and the Puyallup Inventoried Wetlands and Streams map are presented in Appendix B.

## 4.4 Vegetation

The subject property is dominated with a mixed deciduous and coniferous forest canopy on the south and north portions of the property, and a predominately herbaceous and shrub-scrub cover across the center of the property dominated by non-native invasive species such as Himalayan blackberry (*Rubus armeniacus*) and Scotch broom (*Cytisus scoparius*). The forested patch on the northern portion of the property is approximately two acres in size and contains predominately big-leaf maple (*Acer macrophyllum*) and red alder (*Alnus rubra*) interspersed with large conifers, predominately western red cedar (*Thuja plicata*) and Douglas fir (*Pseudotsuga menziesii*). The southern portion is a mix of Douglas fir, western red cedar, and big-leaf maple. The understory of both

forested areas is dominated by salmonberry. Upland portions of the subject property are dominated by mixed deciduous and coniferous forest of red alder, Douglas fir, and western red cedar over an understory of salmonberry, sword fern (*Polystichum munitum*), Himalayan blackberry, and various forbs including piggyback plant (*Tolmiea menziesii*), creeping buttercup (*Ranunculus repens*), and various grasses. The cleared area near the center of the subject property contains a variety of grasses and Scotch broom; with hardhack around the north edge of Wetland B.

## 4.5 Soils

The Natural Resources Conservation Service (NRCS) web soil survey identifies three soil series on or near the subject property: Everett gravelly sandy loam (13B), Kitsap silt loam (20B), and Neilton gravelly loamy sand (24D) (Zulauf, 1979). The soil identified along the northwestern corner and the central eastern portion of the property is Everett gravelly sandy loam, 0 to 6 percent slopes. The soil identified along the meadow and to the northeast corner is Neilton gravelly loamy sand, 8 to 25 percent slopes. The soil identified along the southwest edge of the property is Kitsap silt loam, 2 to 8 percent slopes.

According to the survey, Everett gravelly sandy loam, 0 to 6 percent slopes is a somewhat excessively drained soil formed in gravelly glacial outwash under conifers. In a typical profile, the surface layer (0 to 2 inches) is a very dark brown gravelly sandy loam. The subsoil (2 to 19 inches) is a dark yellowish brown sandy loam and dark brown very gravelly coarse sandy loam. The substratum (19 to more than 60 inches) is clean, loose, very gravelly sand. Everett gravelly sandy loam, 0 to 6 percent slopes is listed as non-hydric on the Pierce County Hydric Soils List (NRCS, 2001).

According to the Survey, Kitsap silt loam, 2 to 8 percent slopes is a moderately well drained soil formed in glacial lake sediments on remnant terraces along Puget Sound. In a typical profile, the surface layer (0 to 10 inches) is composed of a very dark grayish brown and dark brown silt loam. The subsoil (10 to 30 inches) is a brown or grayish brown silty clay loam. The substratum (30 to more than 60 inches) is a mottled light olive brown silt loam and silty clay loam. The substratum is compact glacial till that is cemented in places. Kitsap silt loam (20B) is listed as non-hydric soil but contains as much as 3 percent inclusions of Bellingham soils that are considered hydric on the Pierce County Hydric Soils List (NRCS, 2001).

According to the survey, Neilton gravelly loamy sand, 8 to 25 percent slopes is an excessively drained soil formed in stratified, gravelly glacial outwash deposits on uplands. In a typical profile, a thin duff layer overlies thick black gravelly loamy sand (0 to 3 inches). The subsoil (3 to 21 inches) is brown gravelly loamy sand. The sub-soil (to a depth of greater than 60 inches) is stratified layers of clan sand or very gravelly sand. Neilton gravelly loamy sand, 8 to 25 percent slopes is listed as non-hydric on the Pierce County Hydric Soils List (NRCS, 2001).

## 4.6 Priority Habitats and Species

Washington Department of Fish and Wildlife's (WDFW) Priority Habitats and Species (PHS) maps shows a Palustrine aquatic habitat along the drainage channel located on the western edge of the property and wetlands within one-quarter mile. No other priority habitats or species are listed. WDFW's interactive data map (SalmonScape) identifies no fish presence within 300 feet of the subject property and Bradley Lake provides a barrier to fish migration as the outlet is a vertical

stand-pipe. No priority habitats or Threatened, Endangered, or Sensitive plant or animal species were observed during this investigation or are expected to occur on-site.

## 4.7 Hydrology

A constructed stream channel (formerly a ditch) is located along the western edge of the property and drains water from several upstream detention ponds into Bradley Lake, which is located approximately 200 feet north of the subject property. This stream has been created from a prior ditch as part of the development actions associated with the adjacent commercial businesses. Wetlands A and C enter this drainage channel along the northwestern corner of the property. In addition, Wetland D likely drains northwesterly through a separate off-site ditch into a larger off-site wetland adjacent to Bradley Lake.

## 4.8 Precipitation

Precipitation data was obtained from the National Oceanic and Atmospheric Administration (NOAA) weather station at SeaTac Airport in order to obtain percent of normal precipitation during and preceding the investigation. A summary of data collected is provided in Table 1.

**Table 1. Precipitation Summary**[1]

| Date | Day of | Day Before | 1 Week Prior | 2 Weeks Prior | Month To Date | Water Year[2] | Percent of Normal[3] |
|---|---|---|---|---|---|---|---|
| 12/6/13 | 0.0 | 0.0 | 0.41 | 0.41 | 0.30 | 5.63 | 0/69 |
| 12/9/13 | 0.0 | 0.0 | 0.18 | 0.41 | 0.30 | 5.63 | 0/69 |

1. Data obtained from NOAA weather station at SeaTac Airport. (http://www.weather.gov/climate/index.php?wfo=sew).
2. Water Year is precipitation from October 1, 2013.
3. Percent of normal is shown as for the year/for the water year.

The precipitation data indicates that less than one half inch of precipitation fell within the two weeks prior to the first site visit and precipitation was half of normal (48 to 50 percent of normal) for the water year. The precipitation data suggests that the area was drier than usual and that some areas might have been less saturated and/or less inundated at the time of the site investigation than is normally the case. This condition was a consideration in making a professional wetland boundary determination.

# Chapter 5. Results

## 5.1 Wetlands

The site investigation identified four on-site wetlands with one that extends off-site to the north and an off-site man-made stream channel/drainage ditch that was constructed to convey stormwater around an off-site commercial development (Appendix A). The identified wetlands contained indicators of wetland hydrology, hydric soils, and a predominance of hydrophytic vegetation. A summary of wetlands identified on-site is presented in Table 2. Wetland A is identified as forested wetland whereas Wetland C, B, and D, are scrub-shrub wetlands with various hydrologic regimes. All wetlands have either slope (Wetlands A, C, and D) or depressional (Wetland B) hydrogeomorphic characteristics. The forested wetland is dominated by primarily a monotypic red alder stand. Scrub-shrub wetlands are dominated by salmonberry, skunk cabbage, and sedge species. Most wetlands and associated buffer areas have been previously logged, exhibit minimal plant diversity, and provide limited functional value. The identified wetlands, drainage channel, and associated buffers do not contain sensitive plant, fish, or wildlife species.

**Table 2. Wetland Summary**

| Wetland | Predominant Wetland Classification / Rating | | | | Wetland Size (square feet) | Buffer Width (feet)[E] |
|---|---|---|---|---|---|---|
| | Cowardin[A] | HGM[B] | Ecology[C] | Puyallup[D] | | |
| A | PFOB | Slope | IV | IV | 58,962 | 50 |
| B | PSSC | Depressional | III | III | 5,638 | 50 |
| C | PSSB | Slope | IV | IV | 3,075 | 50 |
| D | PFOB | Slope | IV | IV | 510[F] | 50 |
| | | | | **Total** | **68,185** [F] | |

Notes:
A. Cowardin et al. (1979) Class based on vegetation: P-SS = Palustrine Scrub-Shrub; P-FO = Palustrine Forested; with modifiers for Water Regime or Special Situations.
B. Brinson, M. M. (1993).
C. Washington Department of Ecology rating according to Washington State Wetland Rating System for Western Washington – Revised Hruby (2004).
D. Puyallup Municipal Code 21.06.910
E. Puyallup Municipal Code 21.06.930
F. On-site area only

### *Vegetation*

The wetlands had an overstory of red alder and were dominated primarily by salmonberry, interspersed with some hardhack, lady fern, piggyback plant, and creeping buttercup. Wetland data sheets are located in Appendix D.

### *Soils*

On-site soils in upland areas, especially in the southwestern portion, were generally found to be sandy loams (7.5YR 2.5/2 to 10YR 3/2) to 16 inches and 10YR 4/3 below 16 inches. Hydric soils within wetland were generally found to be silt loam, and have a depleted matrix.

***Hydrology***
On-site wetland hydrology appears to be from a seasonally-high groundwater table, surface sheet flow, direct precipitation, and perched surface water retention on isolated depressions. Hydrologic support for all wetlands and drainages identified is provided by indicators of wetland hydrology observed within the wetlands included free water in test pits, high water table, and saturation.

***Wetland Rating***
According to Washington Department of Ecology (Ecology), Category III wetlands are those with a score of between thirty (30) and fifty (50) functional points. Category IV wetlands have a rating system score of less than thirty (30) functional points and typically lack special habitat features and/or are isolated or disconnected from other aquatic systems or high quality upland habitats. PMC 21.06.910 follows Ecology's wetland rating system. Wetlands A, C, and D, are Category IV wetlands while Wetland B is Category III wetland. Completed wetland rating forms are presented in Appendix E.

### *5.1.1 Wetland A*

Wetland A, comprising of approximately 1.35 acres (58,962 square feet), is classified as a Palustrine Forested, Saturated (PFOB) slope wetland located on the southwestern portion of the subject property. The wetland boundary is defined by topographic changes and a shift in the plant community to more upland species such as Indian plum, Himalayan blackberry, and sword fern. Wetland A was determined to have limited structural diversity, being dominated by red alder with an understory dominated by salmonberry, with indicators of hydric soils, and the presence of saturation to soils. The soil identified within the wetland is a silt loam with depleted dark matrix below a dark and thick dark surface. Hydrology for this wetland appears to be predominately from hillside seeps with minor sources from direct precipitation and surface sheet flow.

Wetland A is a Category IV slope wetland under PMC 21.06.910, which follows the Ecology's rating system, and has a total score of 24 points with 16 points for habitat functions. Wetland A does not contain special habitat features and is located upslope of off-site drainage to Bradley Lake. Table 3 provides a detailed summary of Wetland A (page 15).

### *5.1.2 Wetland B*

Wetland B, comprising 0.13 acres (5,638 square feet), is a Palustrine Scrub-Shrub Seasonally Flooded (PSSC) wetland located on the south central portion of the subject property. The wetland boundary was determined based on a change in soil characteristics, a shift in vegetation species from a predominance of hydrophytic vegetation, presence of saturated soils, and indicators of wetland hydrology to more upland vegetation, non-hydric soils, and an absence of wetland hydrology indicators. Wetland B is a depressional wetland dominated by red alder over creeping buttercup, and hardhack. The soil identified within the wetland is a gravelly sandy loam with a redox dark surface. Hydrology for Wetland B appears to be predominately from a seasonal high groundwater table, surface sheet flow, and precipitation.

Wetland B is a Category III depressional wetland under PMC 21.06.910 and has a total score of 46 points with 16 points for habitat functions. It does not contain special habitat features and situated near the center of the property. Wetland B is isolated from all other known wetlands, drainages, and potentially regulated waters. Table 4 provides a detailed summary of Wetland B.

### *5.1.3 Wetland C*

Wetland C, comprising 0.07 acres (3,075 square feet), is a Palustrine Scrub-Shrub Saturated (PSSB) wetland located near northeastern corner of the property. The wetland boundary was determined based on a change in soil characteristics, a shift in vegetation species to a predominance of hydrophytic vegetation, the presence of saturation to soil surface within a topographic change. Wetland C is a slope wetland dominated by salmonberry and soft rush as herbaceous layer. The soils identified within the wetland are sandy loam and silt loam depleted below a dark surface and a depleted matrix. Hydrology for this wetland predominately comes from uphill seeps with some hydrology resulting from direct precipitation and surface sheet flow

Wetland C is a Category IV slope wetland under PMC 21.06.910 and has a total score of 23 points with 18 points for habitat functions. Table 5 provides a detailed summary of Wetland C.

### *5.1.4 Wetland D*

Wetland D, comprising 0.01 acre (510 square feet), is a Palustrine Forested Saturated (PFOB) wetland located on the slope. The wetland boundary was determined based on a change in soil characteristics, a shift in vegetation species to a predominance of hydrophytic vegetation, the presence of saturation to soil surface within a topographic change. Wetland D is slope wetland which extends off-site and dominated by red alder and salmonberry. The soil identified within the wetland is a sandy loam with depletion below dark surface. Hydrology is provided by groundwater seep, direct precipitation and runoff from adjacent uplands. Wetland D probably hydrologically connected to the Bradley Lake.

Wetland D is a Category IV slope wetland under PMC 21.06.910 and has a total score of 27 points with 18 points for habitat functions. Wetland D does not contain special habitat features. Table 6 provides a detailed summary of Wetland D.

## Table 3. Wetland A Summary

| WETLAND A – INFORMATION SUMMARY | | | |
|---|---|---|---|
| **Location:** | Southwestern portion of the subject property | | |
|  | | **Local Jurisdiction** | City of Puyallup |
| | | **WRIA** | 10 |
| | | **Ecology Rating[A]** | IV |
| | | **Puyallup Rating[B]** | IV |
| | | **Puyallup Buffer Width[C]** | 50 feet |
| | | **Estimated Wetland Size** | 58,962 square feet |
| | | **Cowardin Classification[D]** | PFOB |
| | | **HGM Classification[E]** | Slope |
| | | **Wetland Data Sheet(s)** | DP-2 |
| | | **Upland Data Sheet (s)** | DP-1, DP-3, DP-4 |
| | | **Boundary Flag color** | Orange |
| **Dominant Vegetation** | Red alder over salmonberry. | | |
| **Soils** | Identified on-site as silt loam with a hydrogen sulfide smell. Mapped as Kitsap silt loam by NRCS. | | |
| **Hydrology** | Hydrology for Wetland A appears to be provided by groundwater seeps as well as direct precipitation and surface sheet flow. | | |
| **Rationale for Delineation** | Areas of well-defined surface saturation, hydric soil indicators, and hydrophytic vegetation. Upland areas were determined by topographic rise and predominance of upland plant species, consisting primarily of Indian plum, Himalayan blackberry, and sword fern. | | |
| **Rationale for Local Rating** | Local rating is based upon Ecology's current rating system. | | |
| **Wetland Functions Summary** | | | |
| **Water Quality** | Wetland A has a moderate potential to retain sediments and pollutants from surface runoff due to size, slope morphology, vegetative cover, and position in the landscape. | | |
| **Hydrologic** | The size, slope morphology, and proximity to an off-site drainage corridor suggest this wetland provides moderate hydrologic functions within the watershed. | | |
| **Habitat** | Wildlife habitat functions provided by the wetland are low due to its size and lack of habitat migration corridors to other more functional habitat. Habitat functions are likely limited to small mammal forage and cover, and small bird forage and nesting. Water within the wetland appears to be associated with seeps, and therefore, would not provide habitat for aquatic invertebrates, amphibians, wetland-associated mammals or birds. | | |
| **Buffer Condition** | The buffer surrounding the majority of Wetland A is dominated by red alder, western red cedar, sword fern, and non-native invasive Himalayan blackberry with a high-use roadway adjacent to the south border, commercial uses adjacent to the east and west borders, and low quality disturbed vacant land to the northeast. | | |

Notes:
A. Ecology rating according to Washington State Wetland Rating System for Western Washington – Revised Hruby (2004).
B. Puyallup Municipal Code (21.06).
C. Recommended wetland buffer width according to Puyallup Municipal Code (21.06.930).
D. Cowardin et al. (1979) or National Wetland Inventory (NWI) Class based on vegetation: PEM = Palustrine Emergent; PSS = Palustrine Scrub-Shrub; PFO = Palustrine Forested; Modifiers (-C, -E, -H, -x, et cetera) = Water Regime or Special Situations
E. Brinson, M. M. (1993).

## Table 4. Wetland B Summary

| WETLAND B – INFORMATION SUMMARY | | | |
|---|---|---|---|
| **Location:** | Central portion of the subject property | | |
|  | | **Local Jurisdiction** | City of Puyallup |
| | | **WRIA** | 10 |
| | | **Ecology Rating[A]** | III |
| | | **Puyallup Rating[B]** | III |
| | | **Puyallup Buffer Width[C]** | 50 feet |
| | | **Estimated Wetland Size** | 5,638 square feet |
| | | **Cowardin Classification[D]** | PSSC |
| | | **HGM Classification[E]** | Depressional |
| | | **Wetland Data Sheet(s)** | DP-9 |
| | | **Upland Data Sheet (s)** | DP-10 |
| | | **Boundary Flag color** | Orange |
| **Dominant Vegetation** | Red alder over hardhack and creeping buttercup. | | |
| **Soils** | Identified on-site as sandy loam with redoximorphic features. Mapped as Neilton gravelly loamy sand by NRCS. | | |
| **Hydrology** | Hydrology for Wetland B is provided by precipitation and surface sheet flow. | | |
| **Rationale for Delineation** | Areas of well-defined surface saturation, hydric soils, and hydrophytic vegetation. Upland areas were determined by topographic rise and predominance of upland plant species, consisting primarily of Himalayan blackberry. | | |
| **Rationale for Local Rating** | Local rating is based upon Ecology's current rating system. | | |
| **Wetland Functions Summary** | | | |
| **Water Quality** | Wetland B has a high potential to retain sediments and pollutants from surface runoff due to, vegetative cover, topography, and position in the landscape. | | |
| **Hydrologic** | The small size, isolation and location on landscape suggest Wetland B provides little hydrologic functions within the watershed. | | |
| **Habitat** | Wildlife habitat functions provided by the wetland are low due to its size and lack of habitat migration corridors to other more functional habitat. Habitat functions are likely limited to small mammal forage and cover, and small bird forage and nesting. Water within the wetland appears to be associated with seeps, and therefore, would not provide habitat for aquatic invertebrates, amphibians, wetland associated mammals or birds. | | |
| **Buffer Condition** | The buffer surrounding the majority of Wetland B is dominated by red alder, sword fern, and invasive Himalayan blackberry with commercial uses adjacent to the east and west borders, and low quality disturbed vacant land to the northeast. | | |

Notes:
A. Ecology rating according to Washington State Wetland Rating System for Western Washington – Revised Hruby (2004).
B. Puyallup Municipal Code (21.06).
C. Recommended wetland buffer width according to Puyallup Municipal Code (21.06.930).
D. Cowardin et al. (1979) or National Wetland Inventory (NWI) Class based on vegetation: PEM = Palustrine Emergent; PSS = Palustrine Scrub-Shrub; PFO = Palustrine Forested; Modifiers (-C, -E, -H, -x, et cetera) = Water Regime or Special Situations
E. Brinson, M. M. (1993).

**Table 5. Wetland C Summary**

| WETLAND C – INFORMATION SUMMARY | | |
|---|---|---|
| **Location:** | Northwestern Portion of the subject property | |
|  | **Local Jurisdiction** | City of Puyallup |
| | **WRIA** | 10 |
| | **Ecology Rating[A]** | IV |
| | **Puyallup Rating[B]** | IV |
| | **Puyallup Buffer Width[C]** | 50 feet |
| | **Estimated Wetland Size** | 3,075 square feet |
| | **Cowardin Classification[D]** | PSSB |
| | **HGM Classification[E]** | Slope |
| | **Wetland Data Sheet(s)** | DP-8 |
| | **Upland Data Sheet (s)** | DP-7 |
| | **Boundary Flag color** | Orange |
| **Dominant Vegetation** | Salmonberry and soft rush as sparse understory. | |
| **Soils** | Identified on-site as sandy loam and silt loam depleted below a thick dark surface and a depleted matrix. Mapped as Neilton gravelly loamy sand by NRCS. | |
| **Hydrology** | Hydrology for Wetland C predominately comes from uphill seeps with some hydrology resulting from direct precipitation and surface sheet flow. | |
| **Rationale for Delineation** | Areas of well-defined surface saturation and hydrophytic vegetation. Upland areas were determined by predominance of upland plant species, consisting of a Douglas fir over an understory dominated by a mix of salmonberry and sword fern. | |
| **Rationale for Local Rating** | Local rating is based upon Ecology's current rating system. | |
| **Wetland Functions Summary** | | |
| **Water Quality** | Wetland C has a low potential to retain sediments and pollutants from surface runoff due to small size, slope morphology, limited vegetative cover, and position in the landscape. | |
| **Hydrologic** | The small size, slope morphology, and isolation suggesting it provides little hydrologic functions within the watershed. | |
| **Habitat** | Wildlife habitat functions provided by the wetland is low due to its small size and would be limited to small mammal forage and cover, and small bird forage and nesting. Water within the wetland appears to be ephemeral with no standing water, and therefore, would not provide habitat for aquatic invertebrates, amphibians, wetland associated mammals, or birds. | |
| **Buffer Condition** | The buffer surrounding Wetland C is dominated big leaf maple, Douglas fir with Himalayan blackberry and sword fern as understory. | |

Notes:
A. Ecology rating according to Washington State Wetland Rating System for Western Washington – Revised Hruby (2004).
B. Puyallup Municipal Code (21.06).
C. Recommended wetland buffer width according to Puyallup Municipal Code (21.06.930).
D. Cowardin et al. (1979) or National Wetland Inventory (NWI) Class based on vegetation: PEM = Palustrine Emergent; PSS = Palustrine Scrub-Shrub; PFO = Palustrine Forested; Modifiers (-C, -E, -H, -x, et cetera) = Water Regime or Special Situations
E. Brinson, M. M. (1993).

## Table 6. Wetland D Summary

| WETLAND D– INFORMATION SUMMARY | |
|---|---|
| **Location:** | Northern central portion of the subject property |


| | |
|---|---|
| **Local Jurisdiction** | City of Puyallup |
| **WRIA** | 10 |
| **Ecology Rating[A]** | IV |
| **Puyallup Rating[B]** | IV |
| **Puyallup Buffer Width[C]** | 50 feet |
| **Estimated Wetland Size** | 510 square feet (on-site) |
| **Cowardin Classification[D]** | PFOB |
| **HGM Classification[E]** | Slope |
| **Wetland Data Sheet(s)** | DP-5 |
| **Upland Data Sheet (s)** | DP-6 |
| **Boundary Flag color** | Orange |

| | |
|---|---|
| **Dominant Vegetation** | Red alder, big leaf maple and salmonberry with some skunk cabbage. |
| **Soils** | Identified on-site as sandy loam with a depleted below thick dark surface. Mapped as Everett gravelly sandy loam by NRCS. |
| **Hydrology** | Hydrology for Wetland D appears to be provided by seeps, direct precipitation, and surface sheet flow. |
| **Rationale for Delineation** | Areas of well-defined surface saturation and hydrophytic vegetation. Upland areas were determined by topographic rise and predominance of upland plant species, such as Douglas fir and sword fern. |
| **Rationale for Local Rating** | Local rating is based upon Ecology's current rating system. |
| **Wetland Functions Summary** | |
| **Water Quality** | Wetland D has a low potential to retain sediments and pollutants from surface runoff due to small size and lack of emergent vegetative cover. |
| **Hydrology** | The small size and slope topography suggests that it provides little hydrologic functions within the watershed. |
| **Habitat** | A wildlife habitat function provided by the wetland is low due to small size and lack of diversity in strata. Water within the wetland appears seasonal, and therefore, would not provide habitat for aquatic invertebrates, amphibians, wetland associated mammals, or birds. |
| **Buffer Condition** | The buffer surrounding Wetland D is dominated by red alder, bigleaf maple, salmonberry, and sword fern. |

Notes:
A. Ecology rating according to Washington State Wetland Rating System for Western Washington – Revised Hruby (2004).
B. Puyallup Municipal Code (21.06).
C. Recommended wetland buffer width according to Puyallup Municipal Code (21.06.930).
D. Cowardin et al. (1979) or National Wetland Inventory (NWI) Class based on vegetation: PEM = Palustrine Emergent; PSS = Palustrine Scrub-Shrub; PFO = Palustrine Forested; Modifiers (-C, -E, -H, -x, et cetera) = Water Regime or Special Situations
E. Brinson, M. M. (1993).

## 5.2 Wetland Functions

The wetlands on the subject property may provide several water quality and hydrologic functions, such as limited stormwater retention and infiltration, water quality enhancement, and wildlife habitat; however, these functions are limited by vegetative cover and habitat diversity, wetland size, and the position of the wetlands within the landscape and connectivity to off-site waters.

Wetlands A, C, and D are dominated by native plant species. Storage capacity for all wetlands is very low due to size and geomorphology; therefore, hydrologic functions are limited to minor reductions of surface flows during storm events and groundwater discharge. These wetlands have the little potential to retain some sediments and pollutants, and therefore, provide little biofiltration due to limited size and vegetative structure. Wildlife habitat functions are limited due to lack of plant diversity and limited hydroperiod. Habitat function provided by these wetlands may include limited to amphibian and small bird foraging and nesting and small mammal utilization.

Wetland B has scrub-shrub vegetation cover with emergent reed canarygrass in open areas. This wetland has a moderately high potential to retain pollutants from surface runoff due to the persistent vegetative cover, storage capacity, and geomorphology but has little opportunity to do so given its isolated landscape setting. This wetland has the potential to retain some sediment and pollutants due to the plant community, soil characteristics, and depressions geomorphology within the depression area that can retain water. Habitat functions are also limited due to lack of plant richness, limited hydroperiod, small size, and lack of connectivity.

**Table 7. Functions and Values of Existing Wetlands.**

| Function / Value[A] | Wetland | | | |
|---|---|---|---|---|
| | A | B | C | D |
| **Water Quality Functions** | | | | |
| Sediment Removal | - | x | - | - |
| Nutrient and Toxicant Removal | x | x | x | x |
| **Hydrologic Functions** | | | | |
| Flood Flow Alteration | - | x | - | x |
| Erosion Control and Shoreline Stabilization | - | - | - | - |
| **Habitat Functions** | | | | |
| Production and Export of Organic Matter | x | - | x | x |
| General Habitat Suitability | x | x | x | x |
| Habitat for Aquatic Invertebrates | - | x | - | - |
| Habitat for Amphibians | - | x | - | - |
| Habitat for Wetland-Associated Mammals | x | x | x | x |
| Habitat for Wetland-Associated Birds | x | x | - | - |
| General Fish Habitat | - | - | - | - |
| Native Plant Richness | - | - | - | - |
| **Special Characteristics** | | | | |
| Educational or Scientific Value | - | - | - | - |
| Uniqueness and Heritage | - | - | - | - |

[A]: "-"means that the function is not present; "x" means that the function is present is of lower quality; and "+" means the function is present and is of higher quality.

## 5.3 Wetland Buffers

Under PMC 21.06.910 and 21.06.930, standard wetland buffer widths depend upon the overall rating of the wetlands, habitat functional scores, and level of potential impacts associated with land use types. Wetlands on the subject property include Category III (Wetland B), and Category IV (Wetlands A, C, and D) wetlands. Category III wetlands with a habitat function score of less than 20 points are given a standard fifty (50) foot buffer. Category IV wetlands with a wetland function score between 20 and 30 are given a standard fifty-foot buffer (PMC 21.06.930).

## 5.4 Off-site Drainage

Water from Wetlands A and D drain to a constructed stream channel and flows into Bradley Lake. Bradley Lake has a control structure to maintain water levels within the lake and regulate the outfall, controlling downstream flooding. The off-site drainage has been previously determined to be non-natural artificially created drainage not used by fish populations, and therefore, considered non-regulated via the definition of a stream presented in PMC 21.06.130(126).

# Chapter 6. Regulatory Considerations

Proposed compensatory wetland mitigation actions were examined in the context of watershed-level processes as required by Federal compensatory mitigation rules (USACE 33 CFR Parts 325 & 332, EPA 40 CFR Part 230), State and Federal interagency wetland mitigation guidance (Ecology, 2006 and Hruby, 2009), RCW 90.48, and locally under standards set forth in PMC 21.06.610. The following discussion addresses regulatory considerations and specific actions taken to fulfill regulatory requirements regarding sensitive area impacts and associated mitigation.

## 6.1 Regulatory Considerations

This wetland delineation and habitat assessment should be seen as a completely new assessment due to relatively recent changes in wetland delineation methodology as provided in the *Regional Supplement to the Corps of Engineers Wetland delineation Manual: Western Mountains, Valleys, and Coast Region (Ver 2.0)* (U.S. Army Corps of Engineers, 2009) and hydric soil criteria (United States Department of Agriculture, 2010). These changes included wetland plant status revisions for numerous plant species and changes in hydric soil determination protocols.

The results of the 2013 site investigation identified four wetlands on-site. Three wetlands (Wetlands A, C, and D) are slope wetlands and one (Wetland B) is an isolated depressional wetland. All on-site wetlands receive water primarily from direct precipitation and surface runoff from surrounding upland and residential areas. These wetlands are predominately dominated by native vegetation and comprise a total of 68,185 square feet (1.56 acres). The off-site drainage feature appears to convey water from Wetlands A, C, and D to Bradley Lake, which is a Water of the United States regulated under Section 404 of the CWA. In a December 2, 2008 memorandum from the Environmental Protection Agency (EPA) and USACE, joint guidance is provided that describes waters that are to be regulated under Section 404 of the CWA (USACE, 2008). This memorandum was amended on February 2, 2012 where the EPA and USACE issued a final guidance letter on waters protected by the CWA.

The 2012 guidance describes the following waters where jurisdiction would be asserted: 1) traditional navigable waters, 2) interstate waters, 3) wetlands adjacent to traditional navigable waters, 4) non-navigable tributaries of traditional navigable waters that are relatively permanent meaning they contain water at least seasonally (e.g. typically three months and does not include ephemeral waters), and 5) wetlands that directly abut permanent waters. The regulated waters are those associated with naturally occurring waters and water courses and not artificial waters (i.e. storm pond outfalls).

The 2012 memorandum further goes on to describe waters where jurisdiction would likely require further analysis: 1) Tributaries to traditional navigable waters or interstate waters, 2) Wetlands adjacent to jurisdictional tributaries to traditional navigable waters or interstate waters, and 3) Waters that fall under the "other waters" category of the regulations.

In addition, the 2012 guidance identifies thirteen waters or areas where jurisdiction will not be asserted: 1) Wet areas that are not tributaries or open waters and do not meet the agencies regulatory definition of "wetlands", 2) Waters excluded from coverage under the CWA by existing regulations, 3) Waters that lack a "significant nexus: where one is required for a water to be jurisdictional, 4) Artificially irrigated areas that would revert to upland if the irrigation ceased, 5) Artificial lakes or

ponds created by excavating and/or diking dry land to collect and retain water and which are used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing, 6) Artificial reflecting pools or swimming pools excavated in uplands, 7) Small ornamental waters created by excavating and/or diking dry land to retain water for primarily aesthetic reasons, and puddles, 8) Water-filled depressions created incidental to construction activity, 9) Groundwater, including groundwater drained through subsurface drainage systems, 10) Erosional features (gullies and rills), 11) Non-wetland swales, 12) Ditches that are excavated wholly in uplands, drain only uplands or non-jurisdictional waters, and have no more than ephemeral flow, and 13) Ditches that do not contribute flow, either directly or through other water bodies, to a traditional navigable water, interstate water, or territorial sea.

The wetlands associated with the subject property, with the exception of Wetland B, directly abut, drain to, or have a visible characteristic that suggests connection to traditional navigable waters (TNW) or non-navigable tributaries of such waters; therefore, the Wetlands A, C, and D are likely regulated under Section 404 of the CWA, consistent with the 2008 Approved JD. Wetland B is isolated and likely not subject to regulation under Section 404 of the CWA. Should the USACE decide to assert jurisdiction over Wetland B, a significant nexus test would likely be necessary at this time. Such a test is likely to be long and cumbersome; therefore, the Applicant is opting for USACE review of a Preliminary JD in conjunction with Nationwide Permit (NWP) Program in-lieu of a jurisdictional test, unless the prior Approved JD can be renewed quickly.

New wetland development approvals, including Federal permits, State certification, and local review are likely necessary. The proposed project requires the fill of Wetland B, approximately 0.13 acre (5,638 square feet) which will result in the loss of one Category III isolated wetland. As the required wetland fill is less than 0.5 acre, confirmation of coverage under a simplified CWA Section 404 NWP 29 for residential development projects should be the limit of State and Federal permitting efforts under Sections 401 and 404 of the CWA. Final determination of NWP coverage is at the discretion of the USACE, and other minor NWPs, such as a NWP 18, may be also be used to authorize this project. Therefore, careful consideration of regional permit conditions was given during the planning process in order to satisfy the requirements for NWP 29 and 18.

The proposed development of the subject property impacts wetlands and associated buffers, and therefore, will need to provide compensatory wetland mitigation for the combined loss of wetland area. Joint Federal and State agency guidance (Ecology, 2006) outlines recommended compensatory wetland mitigation standards and ratios. Therefore, any compensatory wetland mitigation planning should attempt to achieve these standards if possible. Additionally, more recent joint USACE and EPA rules (USACE, 2008) have been established that require more careful mitigation planning efforts utilizing a watershed approach in site selection, establishment of enforceable performance standards, and preference for use of mitigation banks or in-lieu fees wherever possible. Such a mitigation action must be able to fully compensate for the loss of wetland functions directly related to the proposed fill and provide measureable improvements to the watershed. On-site in-kind mitigation actions are appropriate for this site as mitigation banking and in-lieu fees are not currently available in this area; therefore, on-site compensatory mitigation actions are being offered to compensate for wetland impacts to satisfy local, Federal, and State mitigation requirements.

On-site mitigation will be provided in the form of wetland creation on parts of Wetlands A and C, enhancement of existing Wetlands A and C, wetland enhancement between created wetlands and Wetlands A and C, and buffer addition.

Federal permitting efforts also trigger Section 7 review under the Endangered Species Act (ESA). Considering the size of the overall project, a Biological Evaluation has been prepared for the project by Soundview Consultants LLC (Soundview Consultants, 2014). The same permitting efforts may also trigger Section 106 review under the National Historic Preservation Act (NHPA) due to the extent of land-disturbing actions.

## 6.2 City of Puyallup Code Requirements

**PMC 21.06.210(83) Mitigation Sequencing**

In accordance with PMC 21.06.610, the proposed project uses a combination of impact reduction mechanisms to meet PMC's mitigation requirements:

*Avoidance*
The proposed project is dependent upon site location, size, and the needs of a master planned senior living community. Reasonable development of the site to meet the purpose and need of the proposed project precludes fewer impacts; therefore, impacts to some on-site wetlands and associated buffer areas are unavoidable. However, directs impacts to higher functioning non-isolated wetlands are being entirely avoided.

*Minimization*
Impacts to wetlands are being avoided and minimized through careful project design. Original siting efforts focused on a larger portion of the site that would have resulted in considerably more permanent wetland impacts than are now proposed, and the proposed project area was modified to avoid permanent negative impacts to the most sensitive non-isolated wetlands areas, namely Wetlands A, C, and D. Potential indirect impacts to wetlands are further being minimized by protection of the buffers of these wetlands to the greatest extent possible. In addition, the proposed project provides comprehensive stormwater treatment and flow control to minimize impacts on hydrology, and silt fences and other temporary erosion and sediment control measures will be installed and maintained on the site.

*Rectification*
Any temporary impacts to the wetlands and buffers caused by enhancement and restoration actions such as removal of non-native invasive species will be repaired through the installation of native plants and the native reseeding of all disturbed soils. This action will improve water quality and help control non-native invasive plants from reestablishing, which will provide substantial improvement over existing wetland conditions. Furthermore, impacted wetland buffer areas will be averaged by establishing additional wetland buffer area immediately adjacent to the existing wetland boundary and the overall area of wetland buffer will not be reduced in compliance with PMC 21.06.930.

*Reduction or Elimination*
Future wetland impacts will be reduced or eliminated over time by the installation of permanent sensitive area signage and fencing between the buffers and adjacent properties in compliance with PMC 21.06.810 in order to reduce habitat disturbance. High-visibility fencing (HVF) will be installed around the wetland buffers prior to site clearing or construction. In addition, all remaining wetland and buffer areas, including all mitigation actions, will be protected in perpetuity via a conservation easement recorded on the sensitive area tracts.

*Compensation*
Wetland creation and enhancement actions will be used to compensate for unavoidable wetland impacts associated with this project. The unavoidable fill of Wetland B will result in the loss of approximately 5,638 square feet of isolated wetland, which will be fully compensated for in accordance with PMC 21.06.970 at a 2:1 ratio by creating a minimum of 11,276 square feet (0.26 acre) of new wetland adjacent to Wetlands A and C. In addition, enhancement of all remaining wetlands is being provided as supplementary compensation.

*Monitoring and Maintenance*
The mitigation site will be monitored for a period of five years with formal inspections by a qualified Wetland Scientist. On-going site management will continue through the long-term monitoring period. A contingency and maintenance plan is included in Chapter 7 of this report to provide corrective measures should any portion of the site fail to meet the success criteria.

**PMC 21.06.920 Performance Standards - Alteration of Wetlands**

Compensatory and non-compensatory mitigation measures will be implemented to protect on-site wetlands, in compliance with PMC 21.06.920. Under PMC 21.06.920, projects should first attempt to avoid impacts all together by not taking certain actions. If actions cannot be eliminated, impacts should be minimized by restraining the magnitude of an action, using different technology or by taking steps to avoid or reduce impacts. For impacts that cannot be avoided or minimized, compensation or rectification for the impact should be provided by replacing, enhancing, or providing substitute resources or environments, followed by monitoring and reduction of the impact over time.

Adverse impacts to wetland functions and values and to associated buffers cannot be entirely avoided, careful planning and project design has avoided the majority of impacts to on-site features. The proposed project is also in compliance with PMC 21.06.610. To demonstrate avoidance and compensatory mitigation measures, mitigation sequencing, in compliance with PMC 21.06.210(83) has been outlined previously within this report. Mitigation measures will be carried out entirely on-site to ensure the watershed receives the benefits of the mitigation actions and include maintenance, monitoring, and a contingency plan.

Pursuant to PMC 21.06.960, all adverse impacts to on-site Wetland B and buffers associated with Wetlands A, C, and D will be fully mitigated for in accordance with PMC 21.06.620. As demonstrated previously within this report, mitigation sequencing has been followed. Mitigation actions are anticipated to achieve equal, if not greater, biological and wetland functions. In addition, no alteration of Category I wetlands is proposed.

**PMC 21.06.970 Wetland Mitigation – General Requirements**

Compensatory mitigation will be provided for all wetland and wetland buffer impacts associated with this project. Methods of compensation, as permitted by PMC 21.06.960, will include wetland creation in upland areas and wetland enhancement actions. All wetland mitigation actions will occur on-site and will provide equal or greater functions than currently exist. Wetland creation actions will occur in the areas surrounding Wetlands A and C. Approximately 11,283 square feet (0.26 acre) of mixed upland and wetland vegetation dominated communities in these areas will be converted to wetland vegetation dominated communities through minor excavation and the selective removal of some upland species. In these same areas, large woody debris (LWD) will also be added to create interruptions in surface drainage. Existing Wetlands A and C and all associated buffers will undergo enhancement actions including removal of non-native invasive plants, installation of native plants, addition of LWD and habitat piles, reductions in overstocked canopy, and seeding of native groundcover. In addition, Wetland D will undergo preservation measures.

**PMC 21.06.930 Performance Standards - Wetland Buffer Widths**

Wetland buffer areas shall be evaluated for all development proposals and activities adjacent to wetland to determine the need for the buffer to protect the integrity, function, and value of the wetland. Wetland buffer widths were established using the guidelines in PMC 21.06.930(2). This project proposes to employ buffer averaging to minimize wetland buffer impacts and buffer additions to offset reductions. The buffer averaging has been designed in compliance with PMC 21.06.930(3), wherein wetland buffers may be averaged provided the total wetland buffer area is no less than before buffer averaging, functions and values of the wetland is not reduced, and the portion of the buffer to be averaged is less than twenty percent of the total buffer length on a project site. Wetland buffer widths for all on-site wetlands can be found in Table 8 in Chapter 7 of this report. The Applicant will implement all reasonable measures, including those in PMC 21.06.940 and 21.06.950 to reduce the adverse effects of adjacent land uses and ensure no net loss of wetland functions and values in conjunction with a sensitive area study and mitigation plan.

# Chapter 7. Mitigation Plan

Wetland mitigation sequencing and draft compensatory mitigation actions for the Wesley Homes – Puyallup Senior Living project are detailed below. This draft mitigation plan has been incorporated into the wetland assessment report for the proposed project to avoid redundancy and is presented in a manner appropriate to the wetland and wetland buffer impacts being proposed. The proposed mitigation actions attempt to closely adhere local Critical Areas Regulations specified in PMC 21.06 for all wetlands and the National and Regional Conditions for State and Federal authorization of fill under the 2011 NWP 29 (Residential Development) or NWP 18 (Minor Discharges), as required under Sections 401 and 404 of the CWA for regulated wetlands.

Potential compensatory wetland mitigation actions were examined in the context of mitigation sequencing and watershed-level processes as required by Federal mitigation rules (USACE 33 CFR Parts 325 & 332, EPA 40 CFR Part 230), State and Federal interagency wetland mitigation guidance (WSDOE, 2006 and Hruby, 2009), and RCW 90.48, and locally under standards set forth in PMC 21.06. However, due to certain disparities between these various guidance documents and codes, this plan must attempt to strike a balance between regulatory requirements to achieve a positive result for the Puyallup River watershed and compensate for wetland functions lost by wetland fill required with the proposed project. In general, compensatory wetland mitigation should be located within the same watershed as the impact site, and should be located where it is most likely to successfully replace lost functions and services that best benefit the impacted watershed. The mitigation plan addresses issues as they relate to the proposed project including possible temporary reduction in surface water quality, water retention, groundwater recharge rates, and habitat functions. When necessary, previous sections of this report will be referenced in the mitigation plan regarding background information.

## 7.1 Purpose and Need

With an aging local population, additional senior housing and assisted living services are needed in the City of Puyallup, Washington. The purpose of the proposed project is to provide senior residential housing, assisted living facilities, and associated infrastructure. The proposed project will also provide additional recreational access and associated infrastructure improvements.

## 7.2 Project Description

The project proposes to provide residential housing, assisted living, and associated infrastructure that expands housing opportunities for seniors within the City of Puyallup. Various senior living housing units, such as independent, townhomes, and apartments along with assisted living units and an intensive care center are proposed. The entire facility will be serviced from one interior road that enters off 39th Avenue Southeast and an alternate entrance from the adjacent commercial center to the east. This project will also provide additional recreational space and associated infrastructure improvements such as an aesthetically designed yet functioning stormwater facility. The project has been careful designed to avoid larger and higher-functioning wetlands and associated buffers to the maximum extent possible. However, in order to adequately develop the property and provide suitable access and services to the senior population of the area, it will be necessary to excavate and fill all 5,638 square feet of Wetland B

## 7.3 Mitigation Sequencing

Impacts to wetlands are being avoided and minimized through careful site selection and project design. Full site development would include a larger portion of the site that would have impacted considerably more valuable wetland areas that will now be preserved through a conservation easement. The proposed project area was modified to avoid more permanent wetlands impacts than are now proposed. These avoidance measures significantly minimize direct wetland impacts to what was previously planned. Potential indirect impacts to wetlands are further being minimized by protecting existing wetland buffers to the greatest extent possible and limiting impacts to the least functioning wetland occurring on-site. The proposed project provides wetland and buffer enhancements throughout the site.

The unavoidable excavation of isolated Wetland B will result in the loss of approximately 5,638 square feet of low-quality wetland which will be parking, and pedestrian access trails. Compensatory wetland mitigation will be required for the loss of potentially regulated wetland area. Joint USACE and EPA rules (USACE, 2008) and interagency guidance (Hruby, 2009) have been established that require more careful mitigation planning efforts utilizing a watershed level approach in selecting site, establishment of enforceable performance standards, and preference for use of mitigation banks or in-lieu fees wherever possible. The subject property is not located within the service area of an approved in-lieu fee or approved wetland mitigations banks; therefore, on-site, in-kind compensatory mitigation wetland mitigation is necessary.

On-site mitigation actions will consist of wetland preservation, creation, and enhancement. As compensatory mitigation, Wetlands A, C, and D will be preserved and a minimum of 11,283 square feet of wetland will be created in upland areas adjacent to Wetlands A and C. These actions will provide compensatory measures for the filling of isolated Wetland B. In addition, buffer enhancement for Wetlands A and C and restoring the buffer of Wetland D, will be provided as voluntary, non-compensatory mitigation actions to offset buffer impacts.

## 7.4 Description of Impacts

### *7.4.1 Wetland Impacts*

Direct wetland impacts will consist of excavating Wetland B. As Wetlands A, C, and D will be preserved and enhanced, there will be no long-term negative impacts to these wetlands as a result of the proposed development. No wetland preservation is proposed as compensatory mitigation for the proposed project actions. Approximately 5,638 square feet (0.13 acre) of isolated depressional Category III wetland (Wetland B) will be permanently impacted. For further details, Appendix A contains existing and proposed site maps. Wetland B is a Palustrine Scrub-Shrub wetland that is isolated from other on-site wetlands and regulated waters. Furthermore, beneficial impacts to Wetland A, C, and D, are proposed as part of the planned on-site mitigation plan. Any fill material will be comprised of native top soils that will come from on-site sources during the initial clearing and grading activities for wetland creation or from a clean source.

### *7.4.2 Buffer Impacts*

The proposed project requires minor buffer averaging of the 50-foot wide wetland buffers of Wetlands C and D (Appendix A). This impact is considered permanent but is necessary to reduce

further potential impacts to the on-site wetlands while accommodating a reasonable site layout. Specifically, buffer averaging is necessary in order to accommodate the 10-foot building setback required by PMC 21.06.840 Mitigation for these minor wetland buffer impacts will be provided through averaging and enhancement of the buffers of Wetlands C and D (Appendix A). A two-rail protective fence will be installed along the perimeters of the buffers to discourage additional anthropogenic impacts. An approximately 5 to 10-foot wide band along the protective fencing of newly-created wetland on Wetlands A and C will be enhanced with native vegetation following removal of invasive non-native plant species. In addition, all buffer areas will be enhanced by removing non-native invasive plants and replanting the area with native species. Furthermore, the remaining critical areas and buffers will be preserved within sensitive area tracts protected by a conservation easement following completion of the mitigation actions. All mitigation actions shall be performed under the direction of the responsible Wetland Scientist. In addition, some temporary buffer impacts will occur as a result of the proposed project; therefore, buffer protection and replanting temporarily disturbed areas will also be provided. Temporary buffer impacts will be limited to grading in the outer areas of Wetland A's buffer to accommodate the slope into the stormwater pond and buffers of Wetlands A, C, and D will incur minor impacts from mitigation actions. Alterations to the buffer will be temporary and will not reduce functions and values of the wetland, and any buffer area temporarily impacted by mitigation actions will be fully restored with native plantings.

## 7.5 Mitigation Strategy

The proposed compensatory wetland mitigation is intended to compensate for lost wetland functions and values by creating and enhancing wetlands on-site and establishing functional wetland buffers as well as providing additional wetland functions according to the needs of the Puyallup watershed and an overall improvement in the quality of wetland habitat through the on-site mitigation actions.

On-site compensatory mitigation actions to compensate for the excavation of isolated Wetland B will include the creation of wetland area in select upland areas adjacent to Wetlands A and C. These areas are identified as having hydrologic connectivity and soil saturation conducive to wetland creation. Wetlands can be established in these locations through the removal of some over-stocked red alder stands and areas of non-native invasive blackberries followed by minor excavation and grading. Portions of existing Wetlands A, C, and D will also be enhanced.

Wetland enhancement actions will consist of manipulation of existing hydrologic and topographic features within Wetlands A and C combined with selective thinning of dense forested plant communities and planting of shade-tolerant native herbaceous vegetation will enhance water quality functions within the wetland. Associated enhancement actions will include the placing of LWD for the formation of shallow pools to enhance hydrologic functions by increasing dwell time of waters in areas of improved groundcover. The use of shade-tolerant sedges, rushes, and grasses will improve retention and filtration of sediments, pollutants, and stormwater. Girdling of a few carefully selected alders in Wetland A to create snags and enhance light penetration to plants in the herbaceous layer will also be conducted at the direction of the Wetland Scientist. These girdling actions will occur in the same locations as the placement of LWD to ensure vigorous groundcover density. Improved groundcover of native herbaceous plant communities will also provide forage, resting, cover, and nesting for small mammals, amphibian and avian fauna which in turn provide prey for raptors and other small mammals. Likewise, preservation of larger alders, maples, and

cedars will provide nesting and cover for birds. In addition to replanting the wetland and buffer areas, non-native invasive species will be removed and these areas replanted with shade providing native species as non-native invasive species out compete native species in moderate to heavily disturbed and exposed areas. Replacing non-native invasive species such as Himalayan blackberry with native vegetation will also enhance the habitat functions of the site. Water quality and hydrologic functions will be provided by increases in storage and infiltration capacity in areas of dense native vegetation and preservation of mature trees on hummocks adjacent to wetland areas will provide an improvement in all three functional categories.

Buffer areas and select adjacent uplands along the perimeter of Wetland A were identified as having hydrologic and soil conditions conducive to wetland creation, and vegetation communities in these areas were identified as partially facultative for wetland conditions. Wetlands can be established through the removal of some upland species such as some red alder stands, non-native Himalayan blackberries (Wetland C), and patches of dense salmonberry with scientific direction. In some areas, LWD can be added to create complexity in surface drainage. Minor grading improvements can be used to direct some of the surface water flows as sheet flow across these areas.

**Table 8. Wetland Summary**

| Wetland | Predominant Wetland Classification / Rating | | | | Wetland Size (square feet) | Buffer Width (feet)[E] | Creation Ratio | | |
|---|---|---|---|---|---|---|---|---|---|
| | Cowardin[A] | HGM[B] | Ecology[C] | Puyallup[D] | | | Federal /State | Pierce County | City of Puyallup[G] |
| A | PFOB | Slope | IV | IV | 58,962 | 50 | N/A | N/A | N/A |
| B | PSSC | Depressional | III | III | 5,638 | 50 | 2:1 | 2:1 | 2:1 |
| C | PSSB | Slope | IV | IV | 3,075 | 50 | N/A | N/A | N/A |
| D | PFOB | Slope | IV | IV | 510[F] | 50 | N/A | N/A | N/A |
| | | | | **Total** | **67,516**[F] | | | | |

Notes:
[A]: Cowardin et al. (1979) Class based on vegetation: P-SS = Palustrine Scrub-Shrub; P-FO = Palustrine Forested with modifiers for Water Regime or Special Situations; G: Brinson, M. M. (1993). +: Forested; *: Scrub-Shrub.
[B]: Brinson, M. M. (1993).
[C]: Ecology rating according to Washington State Wetland Rating System for Western Washington – Revised Hruby (2004)
[D]: PMC 21.06.910; I: On-site area only
[E]: PMC 21.06.930
[F]: On-site area only
[G]: PMC 21.06.970

## 7.6 Mitigation Approach

As described in above sections, the compensatory mitigation for impacts associated with the wetland fill will be accomplished through targeted creation and enhancement actions associated with Wetlands A and C and preservation and buffer enhancement of all remaining wetlands.

Federal and interagency wetland mitigation guidance outlines compensatory ratios based upon use of the current State wetland ratings system (Hruby, 2004) and standardized spatial replacement ratios for western Washington (Ecology, 2006). As the proposed wetland fill likely requires Federal and State approvals, use of such ratios was appropriate to establish adequate compensation in-lieu of detailed functional analyses. In addition, PMC 21.06.970 requires a specific replacement ratio of wetlands. The wetland mitigation ratios established under the State and Federal guidelines likely met

or exceed those required under PMC 21.06.970 (Table 8). PMC 21.06 is silent on mitigation replacement ratios for wetland buffers. In addition, Federal and State wetland mitigation rules and guidance do not recommend compensatory ratios for impacts to wetland buffers as these are not regulated areas under any State or Federal regulations. Rather, recommended buffer standards are established under the guidance for adequate protection of mitigation actions (Ecology, 2006 and USACE, 2007).

The proposed on-site mitigation actions are intended to compensate for the fill of one on-site wetland while preserving existing wetland functions elsewhere by creation and enhancement of wetland and buffer areas. Protection of wetland buffer functions will be provided by the buffer enhancement actions. Proposed enhancement actions consists of removal of invasive vegetation, planting with native trees, shrubs, and groundcover to establish herbaceous understory to create all strata forested vegetation and enhance water quality and habitat protection functions provided to the remaining aquatic features.

Mitigation actions will occur concurrently with the development of the project. Temporary erosion and sediment control (TESC) measures will be implemented consisting of HVF installed around the buffers. A concrete wash water collection basin should also be installed away from the remaining wetland buffers prior to commencement of construction activities requiring additional concrete work. Construction materials along with all construction waste and debris should be effectively managed and kept free of the remaining wetland buffer area.

## 7.7 Wetland Creation Actions

All wetland creation actions will occur on and adjacent to Wetlands A and C. Upland areas occur near undulations of Wetlands A and C which have been identified as having hydrologic conditions and plant communities conducive to wetland creation efforts with minimal temporary impacts. Approximately 11,283 square feet (0.26 acre) of upland vegetation dominated communities in these areas will be carefully excavated and converted to wetlands. Clean water from roof drains will be directed to both wetland creation areas. Roof water not directed to the wetland areas will be collected from rooftops and impervious surfaces of the new development and directed to the stormwater facility. Clean water from the stormwater facility will be directed to the newly expanded Wetland A through a metered outfall.

## 7.8 Wetland Buffer Enhancement Actions

Enhancement of wetland buffer will be conducted wherever feasible, with particular attention to portions along the boundaries of newly created Wetland A and C to protect interior wetland areas. Disturbed vegetation and open buffer areas will be replanted with native upland shrubs and trees such as Douglas fir, Sitka spruce, vine maple, Nootka rose, and red currant. Planting species that help screen the adjacent wetlands and discourage intrusion will be emphasized in areas closest to areas of potential disturbance. Removal of debris, trash, and non-native invasive vegetation will be accompanied by installation of split-rail fencing and critical areas signage to discourage intrusion and improper use of buffer areas.

Enhancements of buffers on the subject property include the removal of non-native invasive plants, such as reed canarygrass and Himalayan blackberry. Such areas will be pre-treated with an herbicide approved by Washington Department of Agriculture. The disturbed and open areas will be

replanted with native trees, shrubs, and groundcover and then seeded with a native seed mix to prevent soil erosion, filter stormwater, and increase biodiversity. Monitoring and removal of re-establishing non-native invasive plants will occur annually or more frequently if necessary for up to ten years.

## 7.9 Wetland Enhancement Actions

Wetland enhancement actions will occur over approximately 62,037 square feet (1.47 acre) of area within Wetlands A and C. In these wetland areas, trees and LWD will be placed perpendicular to the slope in a manner that forms structural interruptions in surface flows to create areas of shallow inundation throughout Wetland A. A similar structure will be created in Wetland C with trees of same size as in Wetland A. Where necessary, these LWD structures will be partially buried to ensure proper retention of surface waters. To increase light penetration to groundcover in these areas, some overstocked red alder and/or salmonberry may be girdled or removed. A mixture of slough sedge and small-fruited bulrush will be planted throughout these areas to increase groundcover density within the wetlands.

### *7.9.1 Plant Scheduling, Species, Density, and Location*

Plant installation should occur as close to conclusion of clearing and grading activities as possible to limit erosion and limit the temporal loss of function provided by the wetland and buffer. All planting should occur between September 1 and May 1 to ensure plants do not dry out after installation, or temporary irrigation measures may be necessary. All planting will be installed according to the procedures detailed in the following subsections using the species and densities outlined in Tables 9, 10, and 11 below.

**Table 9. Proposed Wetland Plant Species**

| Species Name | Common Name | Size | Typical Spacing (ft oc) |
|---|---|---|---|
| *Malus fusca* | Pacific crabapple | 1 gallon | 5 |
| *Picea sitchensis* | Sitka spruce | 3 gallon | 10 |
| *Ribes bracteosum* | stink currant | 1 gallon | 5 |
| *Ribes lacustre* | swamp gooseberry | 1 gallon | 5 |
| *Rosa pisocarpa* | swamp rose | 1 gallon | 5 |

**Table 10. Wetland Buffer Plant Species**

| Species Name | Common Name | Size (g) | Typical Spacing (ft oc) |
|---|---|---|---|
| *Acer circinatum* | vine maple | 1 | 8 |
| *Acer macrophyllum* | bigleaf maple | 3 | 10 |
| *Corylus cornuta,* var. *californica* | beaked hazelnut | 1 | 5 |
| *Gaultheria shallon* | salal | 1 | 3 |
| *Malus fusca* | Pacific crabapple | 1 | 5 |
| *Oemleria cerasiformis* | Indian plum | 1 | 5 |
| *Opiopanax horridus* | devil's club | 1 | 5 |
| *Picea sitchensis* | Sitka spruce | 3 | 10 |
| *Polystichum munitum* | common sword-fern | 1 | 3 |

| | | | |
|---|---|---|---|
| *Prunus emarginata* var. *mollis* | bitter cherry | 1 | 8 |
| *Pseudotsuga menziesii* | Douglas fir | 3 | 10 |
| *Ribes bracteosum* | stink currant | 1 | 5 |
| *Rosa nutkana* | Nootka rose | 1 | 5 |
| *Ribes triste* | Red currant | 1 | 5 |
| *Thuja plicata* | Western red cedar | 3 | 10 |
| *Vaccinium ovatum* | evergreen huckleberry | 1 | 5 |

**Table 11. Wetland Groundcover Seed Mix (Plugs may be substituted at 2 feet on-center)**

| Species Name | Common Name | Percentage |
|---|---|---|
| *Carex obnupta* | slough sedge | 10 |
| *Glyceria borealis* | northern mannagrass | 30 |
| *Scirpus microcarpus* | small-fruited bulrush | 10 |
| *Hordeum brachyantherum* | Meadow barley | 50 |

## 7.10 Wetland Buffer Averaging

Per PMC 21.06.930, wetland buffer may be averaged. Approximately 11,248 square feet (0.258 acre) of wetland buffer areas near Wetlands A, C, and D will be reduced to accommodate reasonable building pads and grading action. Approximately 36,341 square feet (0.374 acre) of on-site wetland buffer areas on either side of Wetlands A, C, and D will be increased in areas that help shield less disturbed interior sections of the wetlands protect higher value sections of areas adjacent to these wetlands. These actions will result in a gain of approximately three times the buffer area than was reduced. This buffer averaging actions will not impair or reduce the habitat, water quality, or hydrologic functions of Wetlands A, C, or D.

## 7.11 Mitigation Goals, Objectives, and Performance Standards

In compliance with PMC 21.06.620, the goals and objectives for the proposed on-site mitigation actions are detailed below. The goals, objectives, and performance standards are based on improving wetland and buffer functions to compensate for the fill of Wetland B. These actions are capable of improving water quality and hydrologic functions and providing a moderate to high level of habitat function for wetland dependent wildlife. The goals and objectives of the proposed mitigation actions are as follows:

**Goal 1** – Compensate for the loss of 5,638 square feet (0.13 acre) of wetland by creating a minimum of 11,283 square feet (0.26 acre) of wetland that provides a moderate level of water quality and habitat functions.

***Objective 1 –*** Establish wetland hydrology by minor grading and directing clean roof water and treated stormwater to create new wetland areas adjacent to Wetlands A and C.

**Performance Standard 1** – The new wetland area will have saturated soils within 12 inches of the surface over 70 percent of the wetland creation area for a

minimum of continuous weeks each growing season in years with normal precipitation levels.

***Objective 2*** – Provide 11,283 square feet (0.26 acre) of new wetland area adjacent to Wetlands A and C.

**Performance Standard 2** – The total wetland creation area will measure at least 11,283 square feet (0.26 acre) in size as demonstrated by wetland delineation in the final year of the 10-year monitoring period.

***Objective 3*** – Create or re-establish wetland habitat with diverse horizontal and vertical vegetation structure and high species richness to provide habitat for wetland-associated wildlife.

**Performance Standard 3** – By the end of Year 10, the wetland creation area will have at least 5 species of native trees and shrubs, and 3 species of native emergent vegetation; native volunteer species will be included in the count. To be considered, the native species must make up at least 5 percent of the vegetation class.

**Goal 2** – Compensate for the loss of 5,638 square feet (0.13 acre) of limited wetland hydrologic and water quality functions by enhancing a minimum of 62,451 square feet (1.4 acre) of slope wetland within the Puyallup River watershed.

***Objective 4*** –Open portions of scrub-shrub and emergent canopy over areas of prolonged saturation to allow light penetration and increase herbaceous groundcover density in areas of prolonged saturation and/or inundation.

**Performance Standard 4** – Shrub density will be less than 80 percent aerial cover by the end of Year 1 in enhancement areas.

**Performance Standard 5** – A native emergent vegetation layer will be present over at least 20 percent of the wetland enhancement area by the end of Year 3.

***Objective 5*** – Introduce small areas of surface inundation within the slope wetland using careful placement of LWD.

**Performance Standard 6** – A minimum of 6 LWD containment structures will be situated in the slope wetland and function in a manner that holds back minor surface waters creating small areas of surface inundation.

**Goal 3** – Improve habitat functions within the Puyallup River watershed by reducing the presence of non-native invasive species and increasing presence of habitat features and vegetation diversity within Wetlands A and C.

***Objective 6*** – Open portions of forested and scrub-shrub canopy and create standing snags to create diverse horizontal and vertical vegetation structure and additional wildlife habitat.

**Performance Standard 6** – A minimum of 12 alder trees will be girdled in up to 6 separate clusters above the LWD containment structures.

**Performance Standard 7** – The enhanced wetlands will contain a minimum of two Cowardin classes with forested areas containing multiple strata including groundcover over a minimum of 10 percent of the understory by Year 3.

**Performance Standard 8** – A minimum of 6 small woody debris (SWD) brush piles will be situated in Wetlands A and C creating additional wildlife habitat features.

**Performance Standard 9** – A minimum of 5 native tree and shrub species will be present within the mitigation area in all monitoring years.

**Performance Standard 10** – The enhanced buffer area on-site will contain a minimum of 20 percent areal coverage by Year 2, 30 percent areal coverage by Year 3 and 40 areal coverage percent by Year 5 in all strata.

***Objective 7*** – Effectively control and/or eliminate invasive species from the wetland enhancement areas.

**Performance Standard 11** – Non-native invasive plants will not make up more than 15 percent total cover in any growing season following Year 1.

**Performance Standard 12** – all knotweeds found within the mitigation site, including buffers, shall be eliminated.

## 7.12 Non-native Invasive Plant Control and Removal

Non-native invasive species such as Himalayan blackberry, Scotch broom, reed canarygrass, and all other listed noxious weeds will be removed from the wetland and buffer area. These species will be pretreated with a root-killing herbicide approved for use in aquatic sites (i.e. Rodeo) approximately one month prior to being cleared and grubbed from the entire preserved, enhanced wetland and associated buffer areas. The pre-treatment with herbicide should occur prior to all planned mitigation actions, and spot treatment should be performed again each fall prior to leaf senescence for a minimum of 3 years.

A maintenance program requiring annual removal of invasive species within all wetland buffer areas by a homeowner's association following project completion, and written into the subdivision's Codes, Covenants, and Restrictions is also recommended. This program should start during the early summer of Year 1 of the monitoring program.

## 7.13 Maintenance and Monitoring

The Applicant is committed to compliance with the proposed mitigation plan and overall success of the project. As such, the Applicant will continue to maintain the project, keeping the site free from of non-native invasive vegetation, trash, and yard waste. In addition, a performance assurance shall be provided to guarantee installation, monitoring maintenance, and performance of mitigation as required by PMC 21.06.650.

The mitigation site will be monitored for a period of 10 years with formal inspections by a qualified Wetland Scientist. The maintenance/monitoring period will begin upon completion of an as-built

plan and certification from a Professional Wetland Scientist or a scientist with equivalent qualifications certifying the mitigation was installed per the mitigation plan. Monitoring events will be scheduled at the time of construction, 30 days after planting, and late in the first through final year's growing seasons in Years 1, 2, 3, 5, 7, and 10. A final assessment will also be conducted in Year 10 to ensure the adequate wetland area is established.

Monitoring will consist of percent cover measurements at permanent sampling points, walk-through surveys to identify invasive species presence and analysis of the mortality rate of the planted species, photographs taken at fixed photo points, wildlife observations, and verification of dispersion trench function and general qualitative buffer function observations.

To determine percent cover, observed vegetation will be identified and recorded by species and an estimate of areal cover of dominant species within each sampling plots. Circular sample plots, approximately 30 feet in diameter are centered at each monitoring station. Trees and shrubs within each 30-foot diameter monitoring plot are recorded with their total areal cover. Ground vegetation is sampled from a 10-foot diameter within each monitoring plot. Herbaceous species within each monitoring plot are then recorded with their estimate cover. A list of observed tree, shrub, and herbaceous species including dominance of each species and wetland status is included within the monitoring report.

To determine wetland hydrology and delineate the wetland in Year 10, the wetland hydrology and wetland boundaries will be determined using the routine approach described in the Washington State Wetlands Identification and Delineation Manual (Ecology, 1997) and U.S. Army Corps of Engineers' Wetlands Delineation Manual (USACE, 1987) modified according to the guidelines established in the Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0) (USACE, 2010).

Weed control will be performed throughout the 10-year monitoring period. Non-native invasive plants and other non-native plants will be removed from the restoration area so that the total cover does not exceed 15 percent areal cover. These plants and weeds will be removed and under the direct supervision of the Wetland Scientist. Herbicide applications will be made in accordance with the Washington Department of Agriculture pesticide application procedures unless prohibited by the City of Puyallup. Herbicides will only be applied by a licensed applicator in aquatic areas (including wetlands). On-going site management will continue through the long-term monitoring period.

## 7.14 Reporting

After each monitoring action, a brief monitoring report will be prepared in compliance with PMC 21.06.630 and the 2008 *Mitigation Monitoring Report Format* (USACE, 2008) detailing the current status of the wetland, measurement of performance standards, and management recommendations and will be submitted to the City of Puyallup and the USACE by the end of each monitoring year to ensure full compliance with the mitigation plan, performance standards, and regulatory conditions of approval.

## 7.15 Contingency Plans

If monitoring results indicate that performance standards are not being met, it may be necessary to implement all or part of the contingency plan. Should any portion of the site fail to meet the success criteria, a contingency plan will be developed and implemented with approval from the City of Puyallup and the USACE. Such plans are adaptive and should be prepared on a case-by-case basis to reflect the failed mitigation characteristics. Contingency plans can include additional plant installation, and plant substitutions including type, size, and location.

*Contingency/maintenance activities may include, but are not limited to:*

1. Replacing plants lost to vandalism, drought, or disease, as necessary;
2. Replacing any plant species with a 20 percent or greater mortality rate after 2 growing seasons with the same species or native species of similar form and function;
3. Irrigating the mitigation areas only as necessary during dry weather if plants appear to be too dry, with a minimal quantity of water;
4. Reseeding and/or repair of wetland and buffer areas as necessary if erosion or sedimentation occurs;
5. Removing all trash or undesirable debris from the wetland and buffer areas as necessary;
6. Removing additional shrub species or girdling additional trees to ensure better light penetration to herbaceous groundcover.

# Chapter 7. Closure

The findings and conclusions documented in this report have been prepared for specific application to this project. They have been developed in a manner consistent with that level of care and skill normally exercised by members of the environmental science profession currently practicing under similar conditions in the area. Our work was also performed in accordance with the terms and conditions set forth in our proposal. The conclusions and recommendations presented in this report are professional opinions based on an interpretation of information currently available to us and are made within the operation scope, budget, and schedule of this project. No warranty, expressed or implied, is made. In addition, changes in government codes, regulations, or laws may occur. Due to such changes, our observations and conclusions applicable to this site may need to be revised wholly or in part.

Wetland boundaries identified by Soundview Consultants LLC are based on conditions present at the time of the site visit and considered preliminary until the flagged wetland boundaries are validated by the jurisdictional agencies. Validation of the wetland boundaries by the regulating agency provides a certification, usually written, that the wetland boundaries verified are the boundaries that will be regulated by the agencies until a specific date or until the regulations are modified. Only the regulating agencies can provide this certification.

As wetlands are dynamic communities affected by both natural and human activities, changes in wetland boundaries may be expected; therefore, wetland delineations cannot remain valid for an indefinite period of time. Local agencies typically recognize the validity of wetland delineations for a period of 5 years after completion of a wetland delineation report. Development activities on a site 5 years after the completion of this wetland delineation report may require revision of the wetland delineation. In addition, changes in government codes, regulations, or laws may occur. Due to such changes, our observations and conclusions applicable to this site may need to be revised wholly or in part.

# Chapter 8. Report Summary

All field inspections, jurisdictional wetland boundary delineations, OHW determinations, habitat assessments, and supporting documentation, including this ***Wetland Delineation, Habitat Assessment, and Mitigation Plan*** prepared for **Wesley Homes – Puyallup Senior Living** were prepared by, or under the direction of, Jim Carsner or Railin Santiago of Soundview Consultants LLC with assistance of Soundview Consultants LLC Scientist Parshuram Acharya. Jim Carsner is a certified Professional Wetland Scientist and Railin Santiago is an Environmental Scientist. Any deviations and/or alterations to this document must be approved by the aforementioned parties at Soundview Consultants LLC. Please see Appendix F for a description of professional qualifications.

# Chapter 9. References


Brinson, M. M., 1993. *A hydrogeomorphic classification for wetlands, Technical Report WRP-DE-4*. U.S. Army Engineer Waterways Experiment Station. Vicksburg, Mississippi.

Carsner J., 2006. Wetland Delineation Report: 28.7-Acre Site. Puyallup, Pierce County, Washington. Barghausen Consulting Engineers, Inc. November 21, 2006. Revised January 14, 2008. Washington.

Cooke, S.S., 1997. *Wetland Plants of Western Washington*. Seattle Audubon Society. Seattle, Washington

Cowardin, L.M. V. Carter, F. Golet, and E.T. LaRoe, 1979. *Classification of Wetlands and Deepwater Habitats of the United States*. U.S. Fish & Wildlife Service. Washington D.C.

Puyallup Municipal Code, 2013. Chapter 21.06: Critical Areas.

Environmental Laboratory, 1987. *Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1*, US Army Engineer Waterways Experiment Station, Vicksburg, Mississippi.

ESA Adolfson, 2008. *CamWest Puyallup Properties – Preliminary Wetland Determination*. October 16, 2007. Seattle, Washington.

Granger, T., T. Hruby, A. McMillan, D. Peters, J. Rubey, D. Sheldon, S. Stanley, E. Stockdale, 2005. *Wetlands in Washington State - Volume 2: Guidance for Protecting and Managing Wetlands*. Washington State Department of Ecology. Publication #05-06-008. Olympia, Washington. [April 2005]

Hitchcock, C.L. and A. Cronquist, 1973. *Flora of the Pacific Northwest*. University of Washington Press. Seattle, Washington.

Hruby, T., 1993. Washington State wetlands rating system for Western Washington- 2nd Ed. Washington State Department of Ecology Publication #93-74.

Hruby, T., 2004. *Washington State wetland rating system for Western Washington – Revised*. Washington State Department of Ecology Publication # 04-06-15.

Lichvar, R.W., 2013. *The National Wetland Plant List*: *2013 wetland ratings*. Phytoneuron 2013-49*:* 1-241. Published 17 July, 2013

Munsell® Color, 2000. *Munsell® soil color charts*. New Windsor, New York.

Natural Resources Conservation Service, 1995. *Hydric Soils of Washington*. U.S. Department of Agriculture. Washington D.C.

Natural Resources Conservation Service, 2001. *Hydric Soils List: Pierce County, Washington*. U.S. Department of Agriculture. Washington D.C.

Sheldon, D., T. Hruby, P. Johnson, K. Harper, A. McMillan, T. Granger, S. Stanley, and E. Stockdale, 2005. Wetlands in Washington State - Volume 1: A Synthesis of the Science. Washington State Department of Ecology. Publication #05-06-006. Olympia, WA. [March 2005]

U. S. Army Corps of Engineers, 2008. *Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in Rapanos v. United States & Carabell v. United States.* EPA/USACE. December 2, 2008.

U. S. Army Corps of Engineers, 2009. *NWS-2008-1029 CAM West Development Puyallup Properties*. USACE. Kristina Tong. March 13, 2009.

U. S. Army Corps of Engineers, 2010. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Ver2.0),* ed. J.S. Wakeley, R.W. Lichvar, and C.V. Noble. ERDC/EL TR-10-3. Vicksburg, MSS: U.S. Army Engineer Research and Development Center.

United States Department of Agriculture, Natural Resources Conservation Service, 2010. *Field Indictors of Hydric Soils in the United States, Version 7.0.* L.M. Vasialas, G.W. Hurt, and C.V. Noble (eds.). USDA, NRCS, in cooperation with the National Technical Committee for Hydric Soils.

Washington State Department of Ecology, U.S. Army Corps of Engineers Seattle District, and U.S. Environmental Protection Agency Region 10. (Ecology), 2006a. *Wetland Mitigation in Washington State – Part 1: Agency Policies and Guidance (Version 1).* Washington State Department of Ecology. Publication #06-06-011a. Olympia, Washington.

Zulauf, A.S., 1979. Soil Survey of Pierce County, Washington. United States Department of Agriculture, Soil Conservation Service in cooperation with Washington State Department of Natural Resources, and Washington State University, Agriculture Research Center. Washington, D.C.

# Appendix A — Site Plans

# WESLEY HOMES - EXISTING SITE CONDITIONS

OWNER:
BCC PUYALLUP LLC
041903-4-030

OWNER:
BCC PUYALLUP LLC
041903-4-033

S01°11'18"E 1273.67'

50' STANDARD WETLAND BUFFER

WETLAND D
CATEGORY IV
(510 SF ONSITE)

50' STANDARD WETLAND BUFFER

WETLAND B
CATEGORY III
(5,638 SF)

S89°31'43"E
116.88'

**REVISED PARCEL 2**
**PUYALLUP B.L.A.**
**NO. 06-84-007**
**A.F.N. 200608185003**

CITY OF PUYALLUP
041903-2-111

S89°07'31"E 369.05'

50' STANDARD WETLAND BUFFER

WETLAND C
CATEGORY IV
(3,075 SF)

S00°28'22"W 208.62'

S01°11'18"E 397.14'

S29°07'35"W
129.40'

50' STANDARD WETLAND BUFFER

Δ=12°32'39"
R=885.12'
L=193.79'

REVISED PARCEL 1

OWNER:
LOWES HIW INC
041903-7-013

WETLAND A
CATEGORY IV
(58,962 SF)

S35°31'42"W
86.48'

N54°28'18"W
20.00'

S35°31'42"W
54.04'

S46°33'22"W
88.64'

S27°30'07"W
54.23'

N44°05'24"W 379.79'

39TH AVE S.E.

Δ=49°29'19"
R=55.00'
L=47.79'

0 50 100 200

GRAPHIC SCALE
1"=100'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(425)251-6222
(425)251-8782 FAX
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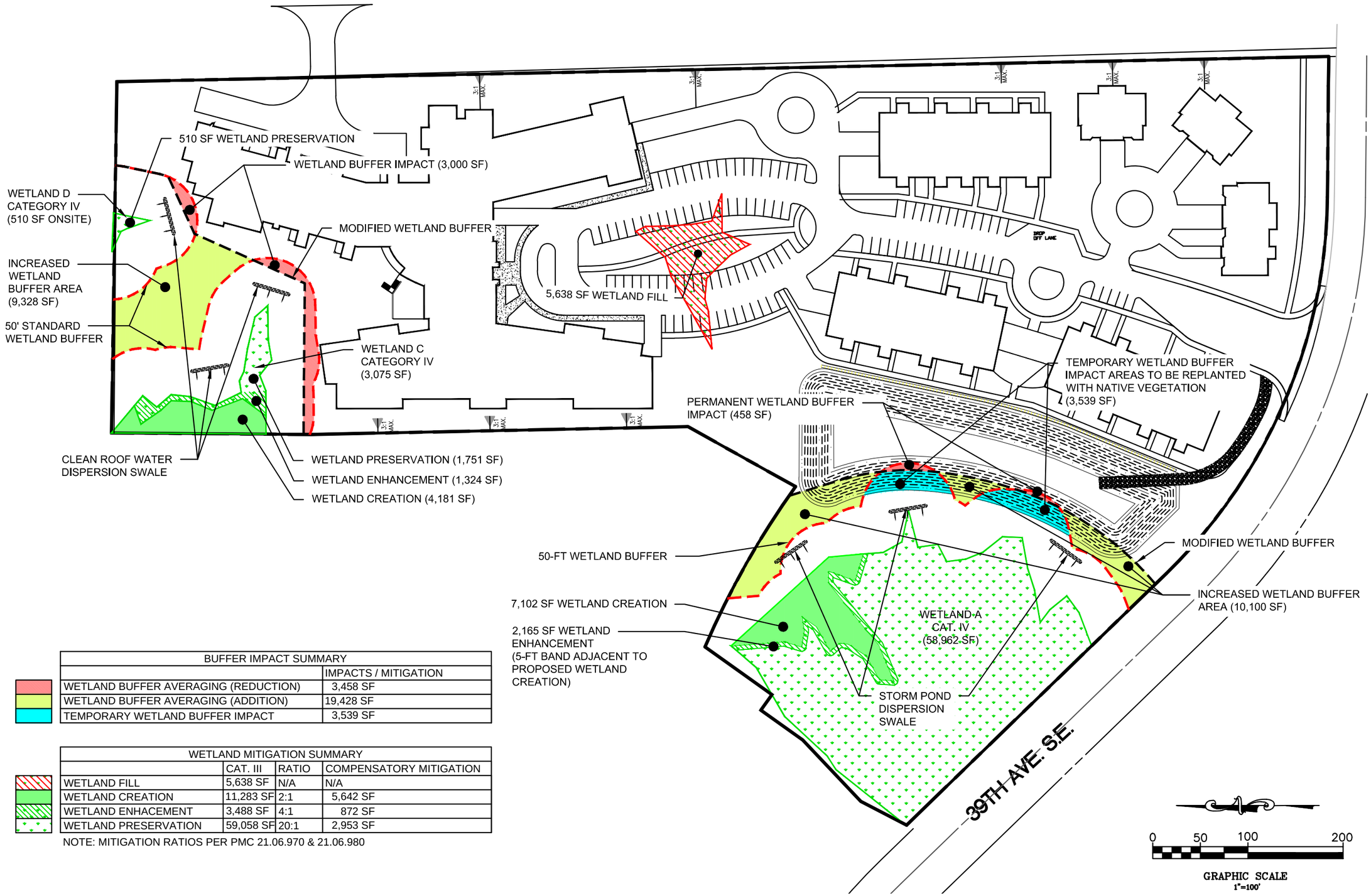
2907 Harborview Drive
Gig Harbor, WA 98335
Office 253.514.8952
Fax 253.514.8954
www.soundviewconsultants.com


WESLEY HOMES
707 39TH AVENUE SE
PUYALLUP, WASHINGTON 98374

A PORTION OF SECTION 3, TOWNSHIP 19N,
RANGE 04E, QUARTER 33, W.M.

| | |
|---|---|
| DATE: | 8/12/2015 |
| JOB: | 1076.0002 |
| BY: | JR |
| SCALE: | 1" = 100' |
| SHEET | 1 OF 3 |

# WESLEY HOMES - WETLAND AND BUFFER IMPACTS AND PROPOSED MITIGATION OVERLAY




| BUFFER IMPACT SUMMARY | |
|---|---|
| | IMPACTS / MITIGATION |
| WETLAND BUFFER AVERAGING (REDUCTION) | 3,458 SF |
| WETLAND BUFFER AVERAGING (ADDITION) | 19,428 SF |
| TEMPORARY WETLAND BUFFER IMPACT | 3,539 SF |

| WETLAND MITIGATION SUMMARY | | | |
|---|---|---|---|
| | CAT. III | RATIO | COMPENSATORY MITIGATION |
| WETLAND FILL | 5,638 SF | N/A | N/A |
| WETLAND CREATION | 11,283 SF | 2:1 | 5,642 SF |
| WETLAND ENHACEMENT | 3,488 SF | 4:1 | 872 SF |
| WETLAND PRESERVATION | 59,058 SF | 20:1 | 2,953 SF |

NOTE: MITIGATION RATIOS PER PMC 21.06.970 & 21.06.980

0 50 100 200

**GRAPHIC SCALE**
1"=100'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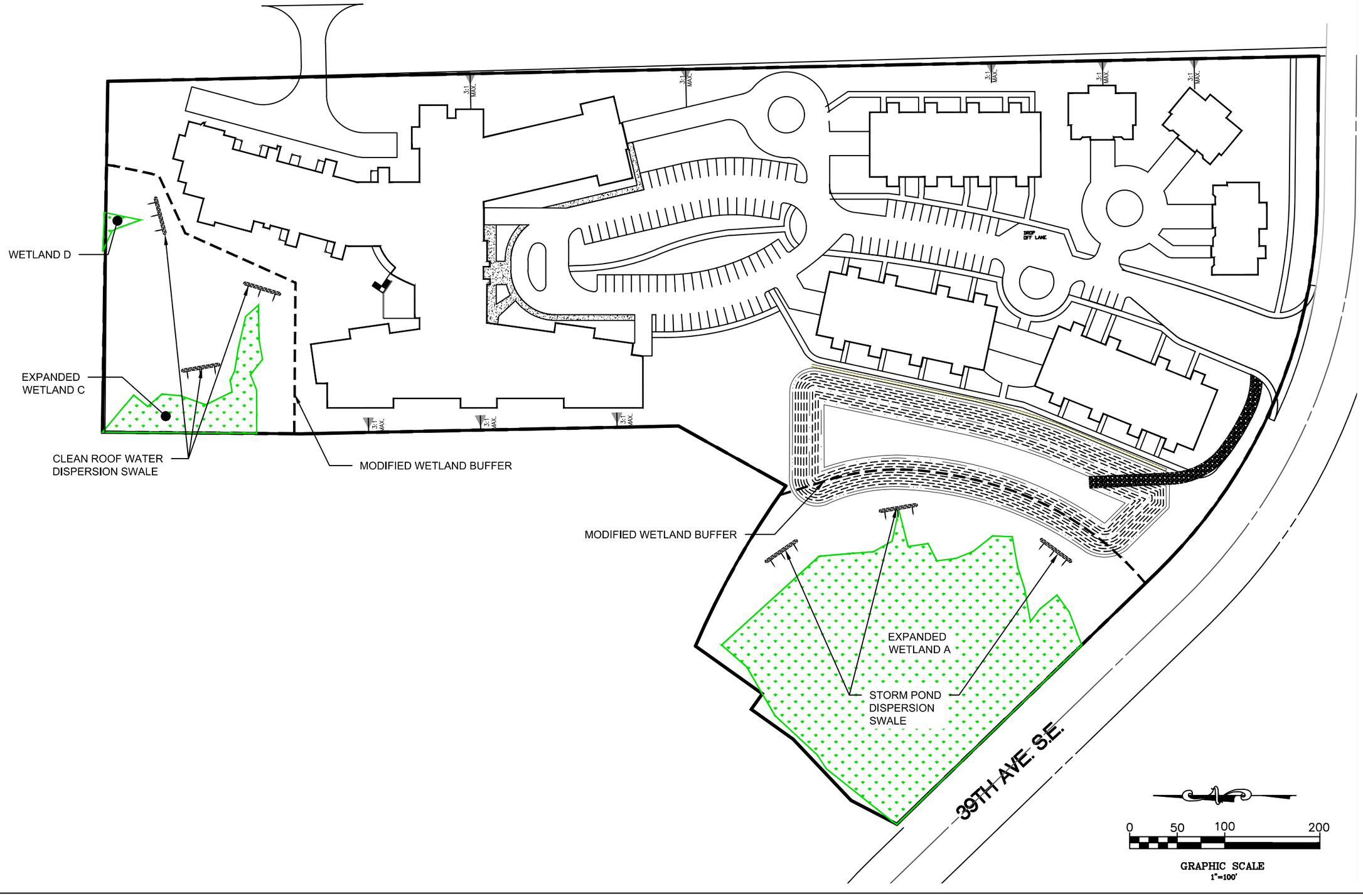
707 39TH AVENUE SE
PUYALLUP, WASHINGTON 98374
A PORTION OF SECTION 3, TOWNSHIP 19N,
RANGE 04E, QUARTER 33, W.M.

DATE: 8/12/2015
JOB: 1076.0002
BY: JR/DS
SCALE: 1" = 100'
SHEET 2 OF 3

# WESLEY HOMES - PROPOSED SITE PLAN





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WESLEY HOMES
707 39TH AVENUE SE
PUYALLUP, WASHINGTON 98374

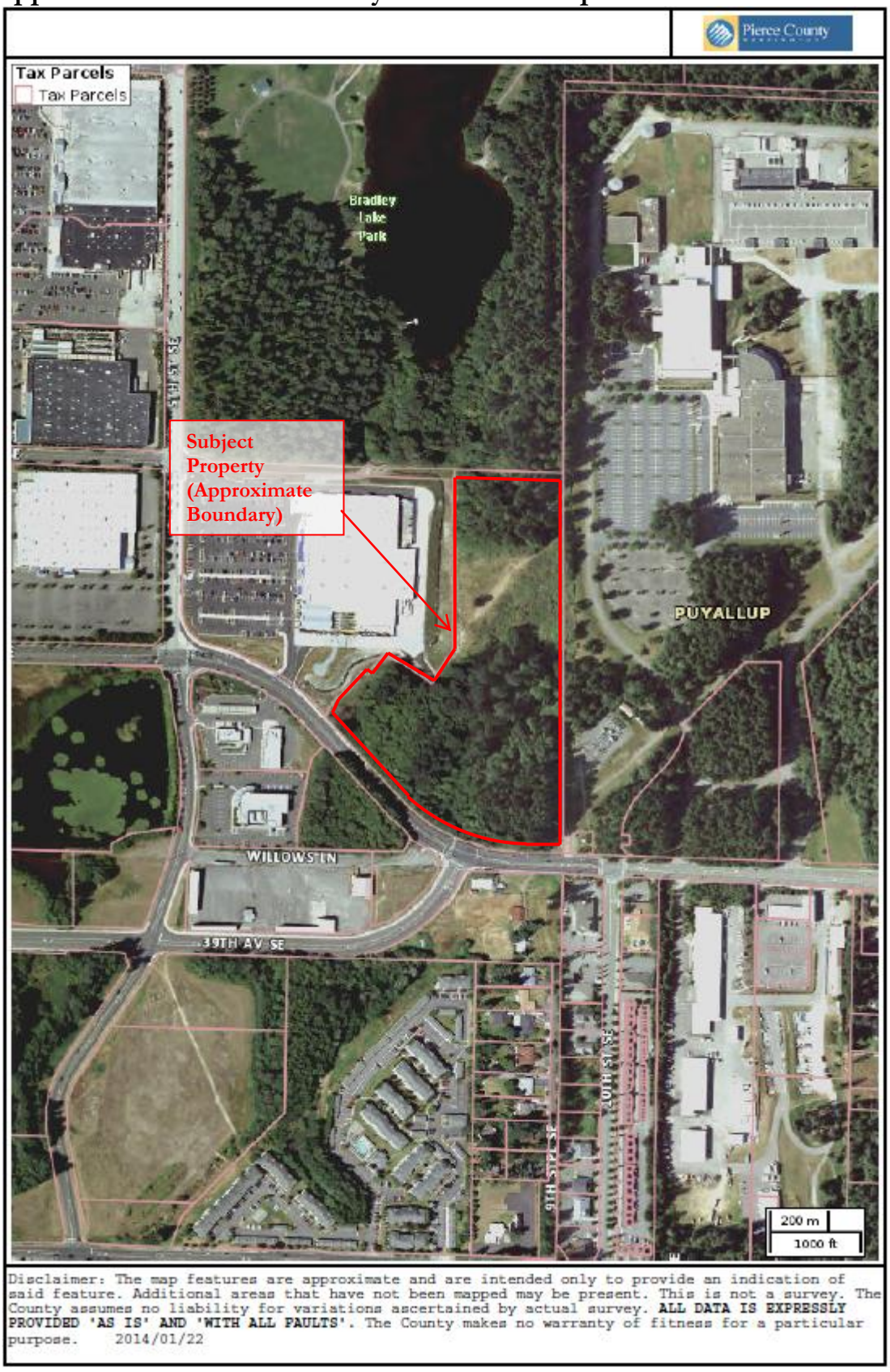
A PORTION OF SECTION 3, TOWNSHIP 19N, RANGE 04E, QUARTER 33, W.M.

| | |
|---|---|
| DATE: | 8/12/2015 |
| JOB: | 1076.0002 |
| BY: | JR/DS |
| SCALE: | 1" = 100' |
| SHEET | 3 OF 3 |

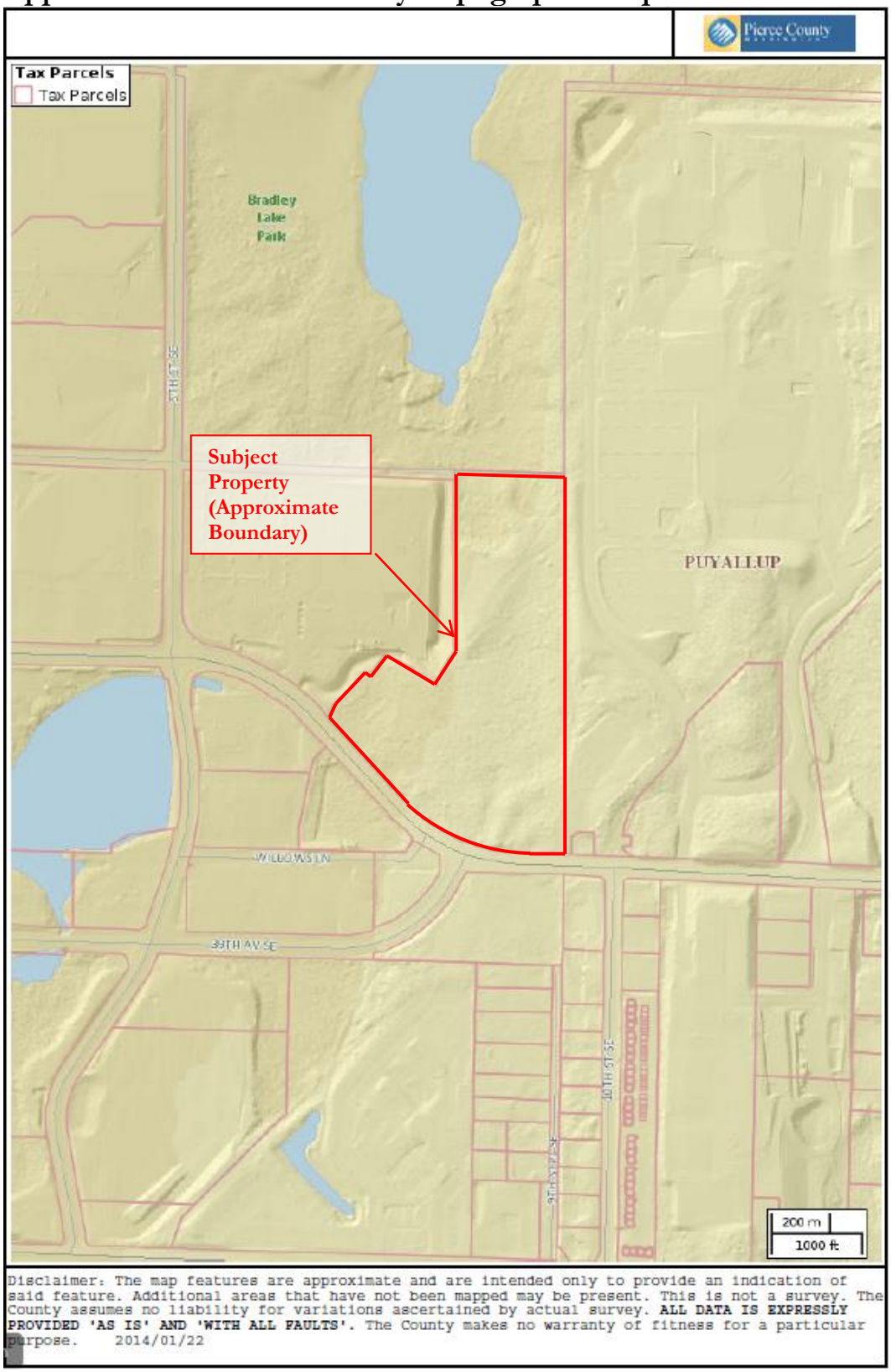
# Appendix B — Background Information

This appendix includes a Pierce County Tax Parcel Map (B1); Pierce County Topographic Map (B2); City of Puyallup Drainage Basins and Streams Map (B3); USFWS National Wetland Inventory Map (B4); Puyallup Inventoried Wetlands and Streams Map (B5), and NRCS Soil Survey Map (B6).

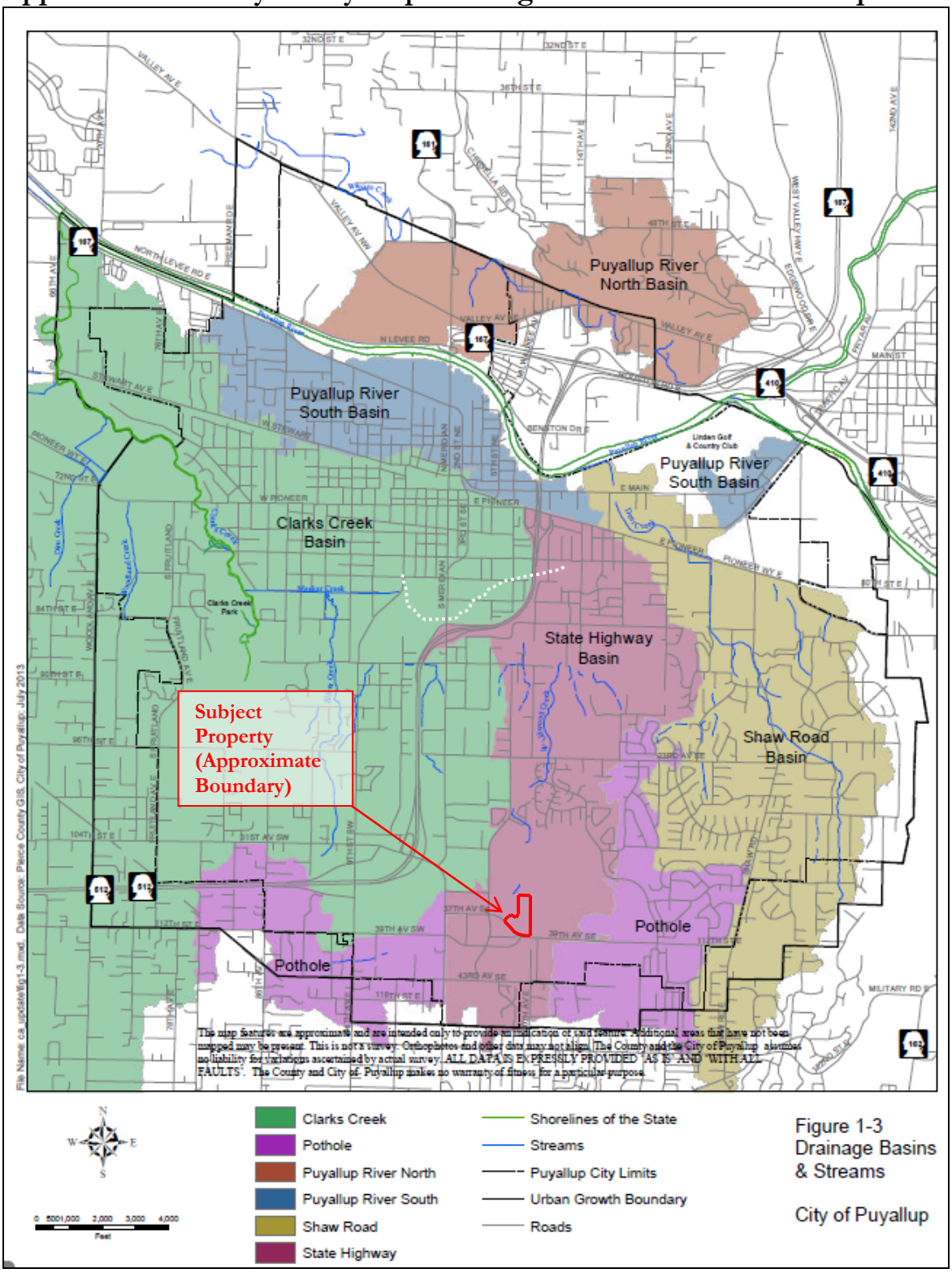
## Appendix B1 — Pierce County Tax Parcel Map



## Appendix B2 — Pierce County Topographic Map

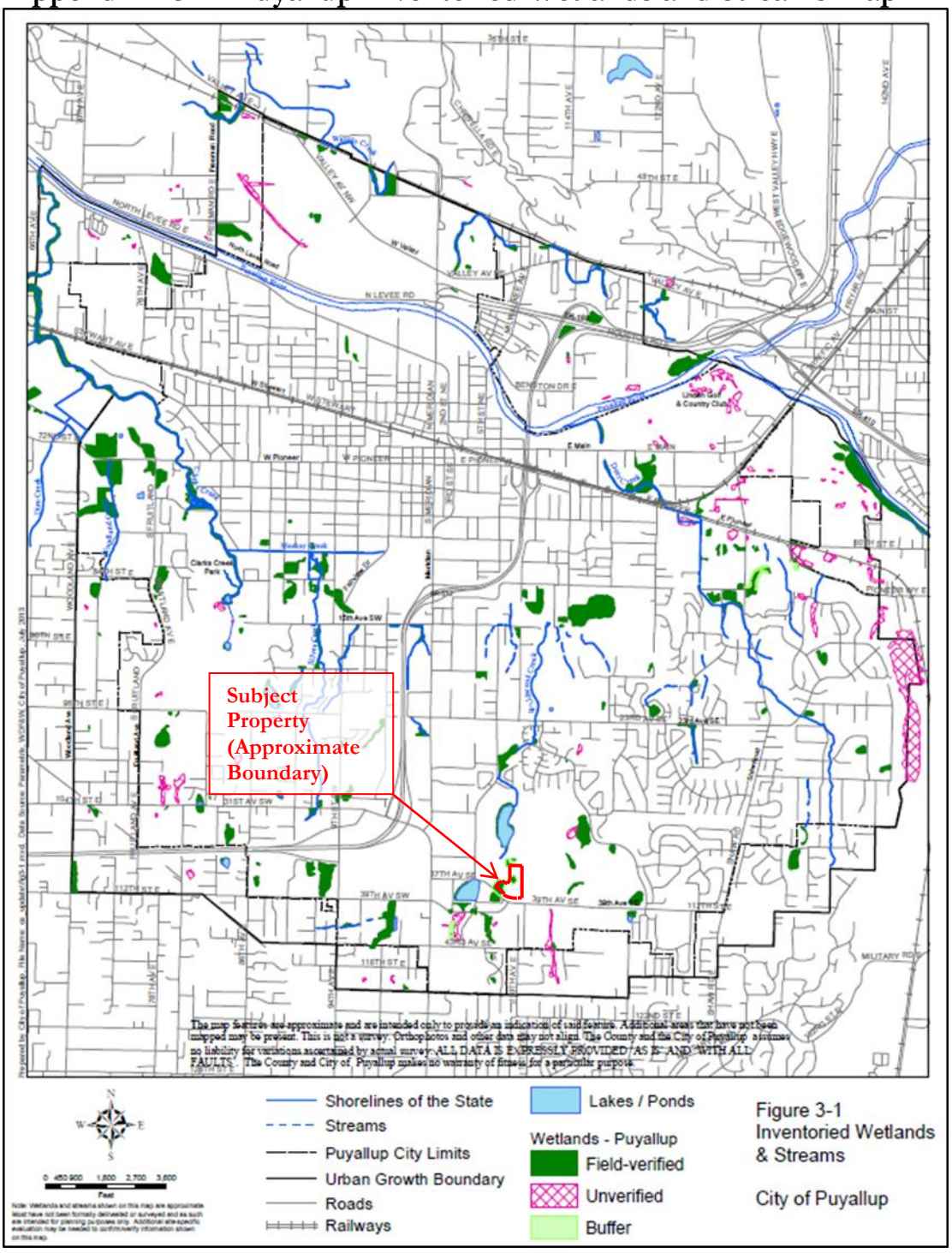


## Appendix B3 — City of Puyallup Drainage Basins and Streams Map

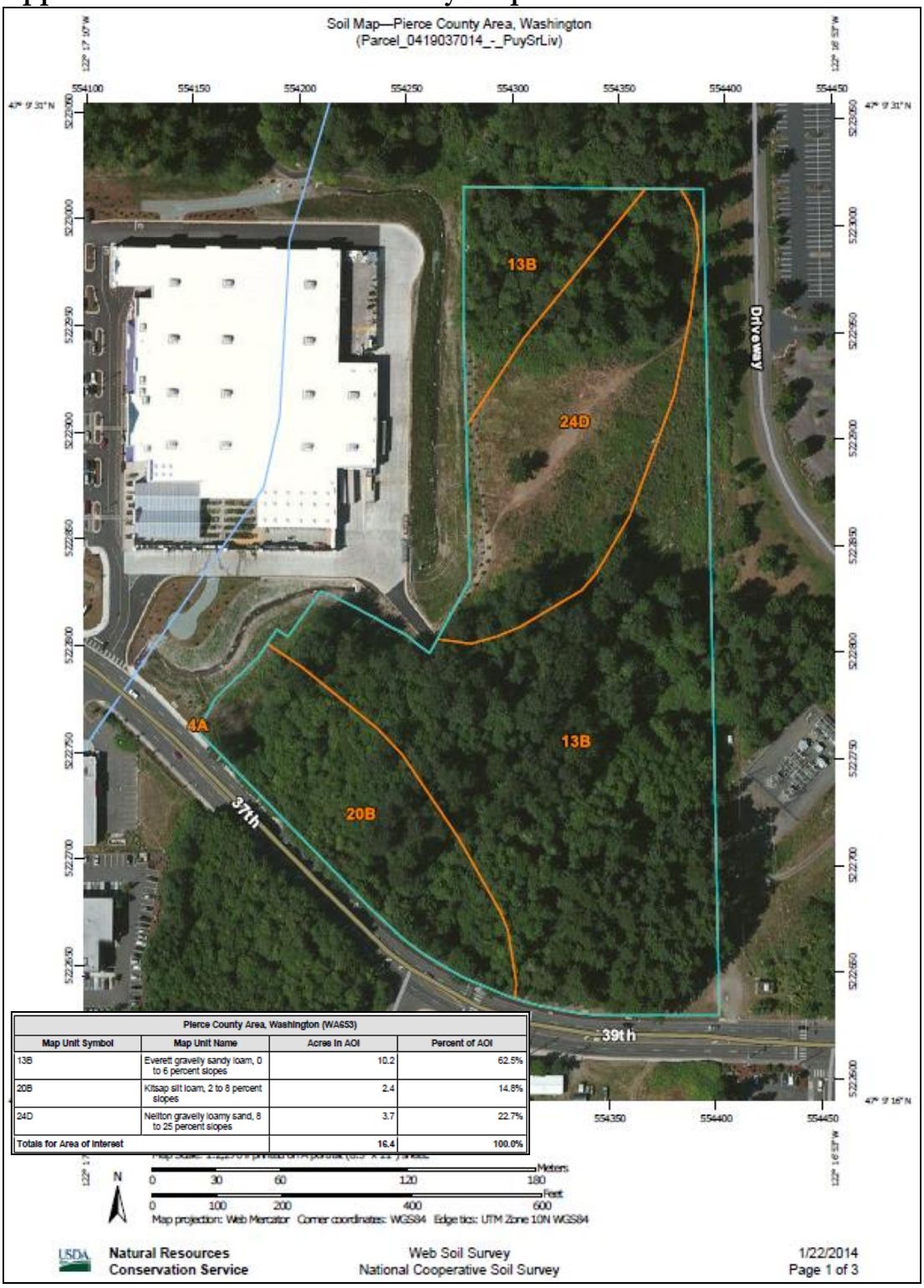


## Appendix B4 — USFWS National Wetland Inventory Map

## Appendix B5 — Puyallup Inventoried Wetlands and Streams Map



# Appendix B6 — NRCS Soil Survey Map



# Appendix C — Methods and Tools

**Table C-1. Methods and tools used to prepare the report.**

| Parameter | Method or Tool | Website | Reference |
|---|---|---|---|
| Wetland Delineation | USACE 1987 Wetland Delineation Manual | http://el.erdc.usace.army.mil/elpubs/pdf/wlman87.pdf | **Environmental Laboratory.** 1987. Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1, US Army Engineer Waterways Experiment Station, Vicksburg, Mississippi. |
| | Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0) | http://www.usace.army.mil/Portals/2/docs/civilworks/regulatory/reg_supp/west_mt_finalsupp.pdf | **U. S. Army Corps of Engineers.** 2010. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0), ed. J.S. Wakeley, R.W. Lichvar, and C.V. Noble. ERDC/EL TR-10-3. Vicksburg, MSS: U.S. Army Engineer Research and Development Center. |
| Wetland Classification | USFWS / Cowardin Classification System | http://www.fws.gov/wetlands/Documents/Classification-of-Wetlands-and-Deepwater-Habitats-of-the-United-States.pdf | **Cowardin**, L. M., V. Carter, F. C. Golet, E. T. LaRoe. 1979. Classification of wetlands and Deepwater habitats of the United States. Government Printing Office, Washington, D.C. |
| | Hydrogeomorphic Classification (HGM) System | http://www.dtic.mil/dtic/tr/fulltext/u2/a270053.pdf | **Brinson**, M. M. (1993). "A hydrogeomorphic classification for wetlands," Technical Report WRP-DE-4, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS. |
| Wetland Rating | Washington State Wetland Rating System | http://www.ecy.wa.gov/biblio/0406025.html | **Hruby**. 2004. Washington State wetland rating system for western Washington –Revised. Publication # 04-06-025. |
| | City of Puyallup Municipal Code | http://www.codepublishing.com/wa/puyallup/ | Uses State Rating System under City of Puyallup Municipal Code Title 21.06 |
| Wetland Functions | Washington State Credit-Debit method | http://www.ecy.wa.gov/biblio/1006011.html | **Hruby**. 2011. Calculating Credits and Debits for Compensatory Mitigation in Western Washington – Operational Draft. Publication # 10-06-011. |
| Wetland Indicator Status | National Wetland Plant List, 2013 Wetland Ratings | http://wetland_plants.usace.army.mil/ | **Lichvar,** R.W. 2013. The National Wetland Plant List: 2013 wetland ratings. Phytoneuron 2013-49: 1–241. Published 17 July 2013. |
| Plant Names | USDA Plant Database | http://plants.usda.gov/ | Website |
| Soils Data | NRCS Soil Survey | http://websoilsurvey.nrcs.usda.gov/app/ | Website GIS data based upon:<br>**Zulauf, A.S.** 1979. Soil Survey of Pierce County, Washington. United States Department of Agriculture, Soil Conservation Service in cooperation with Washington State Department of Natural Resources, and Washington State University, Agriculture Research Center. Washington, D.C. |
| Hydric Soils Data | King County Hydric Soils List | http://soils.usda.gov/use/hydric | **Natural Resources Conservation Service.** 2011. Hydric Soils List: King County, Washington. U.S. Department of Agriculture. Washington D.C. |

| Parameter | Method or Tool | Website | Reference |
|---|---|---|---|
| Threatened and Endangered Species | Washington Natural Heritage Program | http://www.dnr.wa.gov/Pages/default.aspx and http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetland | Washington Natural Heritage Program (Data published 11/04/11). Endangered, threatened, and sensitive plants of Washington. Washington State Department of Natural Resources, Washington Natural Heritage Program, Olympia, WA |
| | Washington Priority Habitats and Species | http://wdfw.wa.gov/conservation/phs/maps_data/ | Priority Habitats and Species (PHS) Program (Data produced 08/13/09). Map of priority habitats and species in project vicinity. Washington Department of Fish and Wildlife (WDFW). |
| | NOAA fisheries species list and maps | http://www.nwr.noaa.gov/ESA-Salmon-Listings/Salmon-Populations/Index.cfm and http://www.nmfs.noaa.gov/pr | Website |
| | USFWS species lists by County | http://www.fws.gov/wafwo/speciesmap_new.html | Website |
| Species of Local Importance | WDFW GIS Data | http://wdfw.wa.gov/mapping/salmonscape/ | Website |
| | | | |

# Appendix D — Wetland Data Forms

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

Project/Site: Puyallup Senior Living City/County: Puyallup, Pierce Sampling Date: 12-6-13

Applicant/Owner: Wesley Homes State: WA Sampling Point: DP-1

Investigator(s): Jim Carsner Section, Township, Range: T19N,R04E, S03

Landform (hillslope, terrace, etc.): HIllslope Local relief (concave, convex, none): None Slope (%): 5%

Subregion (LRR): A - Northwest Forest and Coast Lat: 47.15560 Long: -122.28462 Datum: WGS84

Soil Map Unit Name: Kitsap silt loam, 2 - to 8 percent slopes NWI classification: N/A

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes _____ | No ✓ | **Is the Sampled Area within a Wetland?** Yes _____ No ✓ |
| Hydric Soil Present? | Yes ✓ | No _____ | |
| Wetland Hydrology Present? | Yes _____ | No ✓ | |

Remarks:

Data plot upslope of Wetland flag A2, not all three wetland criteria observed.

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 30' radius) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. Thuja plicata | 90 | Yes | FAC |
| 2. Alnus rubra | 10 | No | FAC |
| 3. | | | |
| 4. | | | |
| | 100 | = Total Cover | |
| **Sapling/Shrub Stratum** (Plot size: 15' radius) | | | |
| 1. Rubus spectabilis | 50 | Yes | FAC |
| 2. Oemleria cerasiformis | 15 | Yes | FACU |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 65 | = Total Cover | |
| **Herb Stratum** (Plot size: 5' radius) | | | |
| 1. Polystichum munitum | 20 | Yes | FACU |
| 2. Athyrium filix-femina | 10 | Yes | FAC |
| 3. Rubus ursinus | 10 | Yes | FACU |
| 4. Equisetum telmateia | 2 | No | FACW |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| | 42 | = Total Cover | |
| **Woody Vine Stratum** (Plot size: 15' radius) | | | |
| 1. | | | |
| 2. | | | |
| | | = Total Cover | |

% Bare Ground in Herb Stratum 58

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | 0 | x 1 = | 0 |
| FACW species | 2 | x 2 = | 4 |
| FAC species | 150 | x 3 = | 450 |
| FACU species | 45 | x 4 = | 180 |
| UPL species | 0 | x 5 = | 0 |
| Column Totals: | 197 (A) | | 634 (B) |

Prevalence Index = B/A = 3.21

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

**Hydrophytic Vegetation Present?** Yes _____ No ✓

Remarks:

Dominance test and prevalence index do not meet hydrophytic vegetation criteria.

## SOIL

Sampling Point: DP-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 Features % | Redox Features Type[1] | Redox Features Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-9" | 2.5YR 2/1 | 100 | - | - | - | - | Silt loam | |
| 9-15" | 2.5YR 5/2 | 95 | 2.5YR 6/6 | 5 | C | M | Sandy silt | Depleted matrix |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

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

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

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

**Indicators for Problematic Hydric Soils[3]:**

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

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

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present? Yes** ✓ **No** _____

Remarks:

Hydric soil indicators A11 and F3 observed.

## HYDROLOGY

**Wetland Hydrology Indicators:**

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

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

Secondary Indicators (2 or more required)

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

**Field Observations:**

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

**Wetland Hydrology Present? Yes** _____ **No** ✓

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

Remarks:

No water or saturated soils in pit at 15 inches. No primary or secondary wetland hydrology criteria observed.

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

Project/Site: Puyallup Senior Living City/County: Puyallup, Pierce Sampling Date: 12-6-13

Applicant/Owner: Wesley Homes State: WA Sampling Point: DP-2

Investigator(s): Jim Carsner Section, Township, Range: T19N,R04E, S03

Landform (hillslope, terrace, etc.): HIllslope Local relief (concave, convex, none): None Slope (%): 3%

Subregion (LRR): A - Northwest Forest and Coast Lat: 47.15547 Long: -122.28453 Datum: WGS84

Soil Map Unit Name: Kitsap silt loam, 2 - to 8 percent slopes NWI classification: N/A

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ✓ | No _____ | **Is the Sampled Area within a Wetland?** Yes ✓ No _____ |
| Hydric Soil Present? | Yes ✓ | No _____ | |
| Wetland Hydrology Present? | Yes ✓ | No _____ | |

Remarks:

Data plot downslope of Wetland Flag A2. All three wetland criteria observed.

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 30' radius) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. Alnus rubra | 100 | Yes | FAC |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | 100 = Total Cover | | |
| **Sapling/Shrub Stratum** (Plot size: 15' radius) | | | |
| 1. Rubus spectabilis | 90 | Yes | FAC |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 90 = Total Cover | | |
| **Herb Stratum** (Plot size: 5' radius) | | | |
| 1. Athyrium filix-femina | 15 | Yes | FAC |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| | 15 = Total Cover | | |
| **Woody Vine Stratum** (Plot size: 15' radius) | | | |
| 1. | | | |
| 2. | | | |
| | = Total Cover | | |

% Bare Ground in Herb Stratum 85

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: |
|---|---|
| OBL species _____ | x 1 = _____ |
| FACW species _____ | x 2 = _____ |
| FAC species _____ | x 3 = _____ |
| FACU species _____ | x 4 = _____ |
| UPL species _____ | x 5 = _____ |
| Column Totals: _____ (A) | _____ (B) |

Prevalence Index = B/A = _____

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid Test for Hydrophytic Vegetation

✓ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

**Hydrophytic Vegetation Present?** Yes ✓ No _____

Remarks:

Dominance Test meets hydrophytic vegetation criteria.

## SOIL

Sampling Point: DP-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 Features % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-3" | - | - | - | - | - | - | Duff | |
| 3-11" | 2.5Y 2.5/1 | 100 | - | - | - | - | Silt loam | |
| 11-16" | 2.5Y 3/1 | 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)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present? Yes** ✓ **No** _____

Remarks:

Hydrogen sulfide odor (A4) present.

## HYDROLOGY

**Wetland Hydrology Indicators:**

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

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

Secondary Indicators (2 or more required)

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

**Field Observations:**

Surface Water Present? Yes ___ No ✓ Depth (inches): _____

Water Table Present? Yes ✓ No ___ Depth (inches): 10"

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): 8"

**Wetland Hydrology Present? Yes** ✓ **No** _____

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

Remarks:

Primary indicators of wetland hydrology observed.

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

Project/Site: Puyallup Senior Living City/County: Puyallup, Pierce Sampling Date: 12-6-13

Applicant/Owner: Wesley Homes State: WA Sampling Point: DP-3

Investigator(s): Jim Carsner Section, Township, Range: T19N,R04E, S03

Landform (hillslope, terrace, etc.): HIllslope Local relief (concave, convex, none): Convex Slope (%): 2%

Subregion (LRR): A - Northwest Forest and Coast Lat: 47.15569 Long: -122.28461 Datum: WGS84

Soil Map Unit Name: Kitsap silt loam, 2 - to 8 percent slopes NWI classification: N/A

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ✓ | No _____ | **Is the Sampled Area within a Wetland?** Yes _____ No ✓ |
| Hydric Soil Present? | Yes _____ | No ✓ | |
| Wetland Hydrology Present? | Yes _____ | No ✓ | |

Remarks:

Data plot upslope of Wetland Flag 4. Not all three wetland criteria observed.

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 30' radius) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. Alnus rubra | 100 | Yes | FAC |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | 100 | = Total Cover | |
| **Sapling/Shrub Stratum** (Plot size: 15' radius) | | | |
| 1. Rubus spectabilis | 100 | Yes | FAC |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 100 | = Total Cover | |
| **Herb Stratum** (Plot size: 5' radius) | | | |
| 1. Athyrium filix-femina | 5 | Yes | FAC |
| 2. Ranunculus repens | 10 | Yes | FAC |
| 3. Carex obnupta | 1 | N0 | OBL |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| | 16 | = Total Cover | |
| **Woody Vine Stratum** (Plot size: 15' radius) | | | |
| 1. | | | |
| 2. | | | |
| | | = Total Cover | |

% Bare Ground in Herb Stratum 84

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: |
|---|---|
| OBL species _____ | x 1 = _____ |
| FACW species _____ | x 2 = _____ |
| FAC species _____ | x 3 = _____ |
| FACU species _____ | x 4 = _____ |
| UPL species _____ | x 5 = _____ |
| Column Totals: _____ (A) | _____ (B) |

Prevalence Index = B/A = _____

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid Test for Hydrophytic Vegetation

✓ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

**Hydrophytic Vegetation Present?** Yes ✓ No _____

Remarks:

Dominance Test meets hydrophytic vegetation criteria.

## SOIL

Sampling Point: DP-3

**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 Features % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-6" | 7.5YR 2.5/3 | 100 | - | - | - | - | Silt loam | |
| 6-15" | 7.5YR 2.5/3 | 99 | 7.5YR 4/6 | 1 | C | M | 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)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present? Yes _____ No ✓**

Remarks:

Soil profile does not meet hydric soil criteria.

## HYDROLOGY

**Wetland Hydrology Indicators:**

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

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

Secondary Indicators (2 or more required)

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

**Field Observations:**

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes ✓ No _____ Depth (inches): 12"

Saturation Present? (includes capillary fringe) Yes ✓ No _____ Depth (inches): 11"

**Wetland Hydrology Present? Yes _____ No ✓**

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

Remarks:

Water levels do not meet wetland hydrology criteria.

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

Project/Site: Puyallup Senior Living City/County: Puyallup, Pierce Sampling Date: 12-6-13

Applicant/Owner: Wesley Homes State: WA Sampling Point: DP-4

Investigator(s): Jim Carsner Section, Township, Range: T19N,R04E, S03

Landform (hillslope, terrace, etc.): HIllslope Local relief (concave, convex, none): Convex Slope (%): 3%

Subregion (LRR): A - Northwest Forest and Coast Lat: 47.15630 Long: -122.28428 Datum: WGS84

Soil Map Unit Name: Everett gravelly sandy loam, 0 - to 6 percent slopes NWI classification: N/A

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes _____ | No ✓ | **Is the Sampled Area within a Wetland?** Yes _____ No ✓ |
| Hydric Soil Present? | Yes ✓ | No _____ | |
| Wetland Hydrology Present? | Yes _____ | No ✓ | |

Remarks:

Precipitation was approximately 50% of normal for the water year. Upland DP for Wetland A.

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 30' radius) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. Alnus rubra | 100 | Yes | FAC |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | 100 | = Total Cover | |
| **Sapling/Shrub Stratum** (Plot size: 15' radius) | | | |
| 1. Rubus spectabilis | 90 | Yes | FAC |
| 2. Cornus alba | 10 | No | FACW |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 100 | = Total Cover | |
| **Herb Stratum** (Plot size: 5' radius) | | | |
| 1. Polystichum munitum | 10 | Yes | FACU |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| | 10 | = Total Cover | |
| **Woody Vine Stratum** (Plot size: 15' radius) | | | |
| 1. Rubus ursinus | 5 | Yes | FACU |
| 2. | | | |
| | 5 | = Total Cover | |

% Bare Ground in Herb Stratum 85

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | | x 1 = | |
| FACW species | 10 | x 2 = | 20 |
| FAC species | 190 | x 3 = | 570 |
| FACU species | 15 | x 4 = | 60 |
| UPL species | | x 5 = | |
| Column Totals: | 215 (A) | | 650 (B) |

Prevalence Index = B/A = 3.02

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

**Hydrophytic Vegetation Present?** Yes _____ No ✓

Remarks:

Dominance Test and Prevalence Index score do not meet hydrophytic vegetation criteria.

## SOIL

Sampling Point: DP-4

**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 Features % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-5" | 10YR 2/2 | 100 | - | - | - | - | Sandy loam | |
| 5-9" | 10YR 3/2 | 95 | 10YR 3/4 | 5 | C | M | Sandy loam | |
| 9-12" | 10YR 3/1 | 95 | 10YR 3/2 | 5 | C | M | 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)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present? Yes** ✓ **No** _____

Remarks:

Hard packed and roots limited depth below 12 inches. Soil profile meets hydric soil criteria F6.

## HYDROLOGY

**Wetland Hydrology Indicators:**

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

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

Secondary Indicators (2 or more required)

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

**Field Observations:**

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

**Wetland Hydrology Present? Yes** _____ **No** ✓

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

Remarks:

No primary and secondary wetland hydrology indicators observed.

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

Project/Site: Puyallup Senior Living City/County: Puyallup, Pierce Sampling Date: 12-6-13

Applicant/Owner: Wesley Homes State: WA Sampling Point: DP-5

Investigator(s): Jim Carsner Section, Township, Range: T19N,R04E, S03

Landform (hillslope, terrace, etc.): HIllslope Local relief (concave, convex, none): Convex Slope (%): 3%

Subregion (LRR): A - Northwest Forest and Coast Lat: 47.15838 Long: -122.28306 Datum: WGS84

Soil Map Unit Name: Everett gravelly sandy loam, 0 - to 6 percent slopes NWI classification: N/A

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ✓ | No _____ | **Is the Sampled Area within a Wetland?** Yes ✓ No _____ |
| Hydric Soil Present? | Yes ✓ | No _____ | |
| Wetland Hydrology Present? | Yes ✓ | No _____ | |

Remarks:

Data Plot is upslope of Wetland Flag D3. All three wetland criteria observed.

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 30' radius) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | _____ = Total Cover | | |
| **Sapling/Shrub Stratum (Plot size: 15' radius)** | | | |
| 1. Rubus spectabilis | 100 | Yes | FAC |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 100 = Total Cover | | |
| **Herb Stratum (Plot size: 5' radius)** | | | |
| 1. Tolmiea menziesii | 10 | Yes | FAC |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| | 10 = Total Cover | | |
| **Woody Vine Stratum (Plot size: 15' radius)** | | | |
| 1. | | | |
| 2. | | | |
| | _____ = Total Cover | | |

% Bare Ground in Herb Stratum 90

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: |
|---|---|
| OBL species _____ | x 1 = _____ |
| FACW species _____ | x 2 = _____ |
| FAC species _____ | x 3 = _____ |
| FACU species _____ | x 4 = _____ |
| UPL species _____ | x 5 = _____ |
| Column Totals: _____ (A) | _____ (B) |

Prevalence Index = B/A = _____

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid Test for Hydrophytic Vegetation

✓ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

**Hydrophytic Vegetation Present?** Yes ✓ No _____

Remarks:

Dominance Test meets hydrophytic vegetation criteria.

## SOIL

Sampling Point: DP-5

**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 Features % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-5" | 10YR 2/1 | 100 | - | - | - | - | Sandy loam | |
| 5-13" | 10YR 4/2 | 90 | 10YR 4/4 | 10 | C | M | Sandy loam | Distinct redox feature |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

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

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

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

**Indicators for Problematic Hydric Soils[3]:**

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

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

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes ✓ No ___

Remarks:

Soil meets hydric soil criteria: depleted below dark surface (A11) and depleted matrix (F3) .

## HYDROLOGY

**Wetland Hydrology Indicators:**

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

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

Secondary Indicators (2 or more required)

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

**Field Observations:**

Surface Water Present? Yes ___ No ✓ Depth (inches): _____

Water Table Present? Yes ✓ No ___ Depth (inches): 10"

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): 8"

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

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

Remarks:

Primary wetland indicators A2 and A3 observed.

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

Project/Site: Puyallup Senior Living City/County: Puyallup, Pierce Sampling Date: 12-6-13

Applicant/Owner: Wesley Homes State: WA Sampling Point: DP-6

Investigator(s): Jim Carsner, John Foster Section, Township, Range: T19N,R04E, S03

Landform (hillslope, terrace, etc.): HIllslope Local relief (concave, convex, none): None Slope (%): 5%

Subregion (LRR): A - Northwest Forest and Coast Lat: 47.15836 Long: -122.28306 Datum: WGS84

Soil Map Unit Name: Everett gravelly sandy loam, 0 - to 6 percent slopes NWI classification: N/A

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ✓ | No _____ | **Is the Sampled Area within a Wetland?** Yes _____ No ✓ |
| Hydric Soil Present? | Yes _____ | No ✓ | |
| Wetland Hydrology Present? | Yes _____ | No ✓ | |

Remarks:

Data plot is upslope of Wetland flag D3. Not all three wetland criteria observed.

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 30' radius) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. Alnus rubra | 90 | Yes | FAC |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | 100 | = Total Cover | |
| **Sapling/Shrub Stratum** (Plot size: 15' radius) | | | |
| 1. Rubus spectabilis | 95 | Yes | FAC |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 95 | = Total Cover | |
| **Herb Stratum** (Plot size: 5' radius) | | | |
| 1. Polystichum munitum | 5 | Yes | FACU |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| | 5 | = Total Cover | |
| **Woody Vine Stratum** (Plot size: 15' radius) | | | |
| 1. | | | |
| 2. | | | |
| | | = Total Cover | |

% Bare Ground in Herb Stratum 95

**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 _____ | x 1 = _____ |
| FACW species _____ | x 2 = _____ |
| FAC species _____ | x 3 = _____ |
| FACU species _____ | x 4 = _____ |
| UPL species _____ | x 5 = _____ |
| Column Totals: _____ (A) | _____ (B) |

Prevalence Index = B/A = _____

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid Test for Hydrophytic Vegetation

✓ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

**Hydrophytic Vegetation Present?** Yes ✓ No _____

Remarks:

Dominance test meets hydrophytic vegetation criteria.

## SOIL

Sampling Point: DP-6

**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 Features % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-9" | 10YR 3/2 | 100 | | | | | Sandy loam | |
| 9-15" | 10YR 4/4 | 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)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present? Yes _____ No ✓**

Remarks:

No hydric soil indicator observed.

## HYDROLOGY

**Wetland Hydrology Indicators:**

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

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

Secondary Indicators (2 or more required)

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

**Field Observations:**

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): 14"

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): 12"

**Wetland Hydrology Present? Yes _____ No ✓**

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

Remarks:

No primary or secondary wetland hydrology indicator observed.

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

Project/Site: Puyallup Senior Living City/County: Puyallup, Pierce Sampling Date: 12-9-13

Applicant/Owner: Wesley Homes State: WA Sampling Point: DP-7

Investigator(s): Jim Carsner Section, Township, Range: T19N,R04E, S03

Landform (hillslope, terrace, etc.): HIllslope Local relief (concave, convex, none): None Slope (%): 5%

Subregion (LRR): A - Northwest Forest and Coast Lat: 47.15807 Long: -122.28349 Datum: WGS84

Soil Map Unit Name: Everett gravelly sandy loam, 0 - to 6 percent slopes NWI classification: N/A

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes _____ | No ✓ | **Is the Sampled Area within a Wetland?** Yes _____ No ✓ |
| Hydric Soil Present? | Yes _____ | No ✓ | |
| Wetland Hydrology Present? | Yes _____ | No ✓ | |

Remarks:

Data plot upslope of Wetland Flag C1. Not all three wetland criteria observed.

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 30' radius) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. Acer macrophyllum | 40 | Yes | FACU |
| 2. Alnus rubra | 30 | Yes | FAC |
| 3. | | | |
| 4. | | | |
| | 70 | = Total Cover | |
| **Sapling/Shrub Stratum** (Plot size: 15' radius) | | | |
| 1. Rubus spectabilis | 85 | Yes | FAC |
| 2. Oemleria cerasiformis | 15 | No | FACU |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 100 | = Total Cover | |
| **Herb Stratum** (Plot size: 5' radius) | | | |
| 1. Polystichum munitum | 35 | Yes | FACU |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| | 35 | = Total Cover | |
| **Woody Vine Stratum** (Plot size: 15' radius) | | | |
| 1. | | | |
| 2. | | | |
| | | = Total Cover | |

% Bare Ground in Herb Stratum 65

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | 0 | x 1 = | 0 |
| FACW species | 0 | x 2 = | 0 |
| FAC species | 115 | x 3 = | 345 |
| FACU species | 90 | x 4 = | 360 |
| UPL species | 0 | x 5 = | 0 |
| Column Totals: | 205 (A) | | 705 (B) |

Prevalence Index = B/A = 3.4

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

**Hydrophytic Vegetation Present?** Yes _____ No ✓

Remarks:

Dominance Test and Prevalence Index do not meet hydrophytic vegetation criteria.

## SOIL

Sampling Point: DP-7

**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 Features % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-5" | - | - | - | - | - | - | Duff | |
| 5-12" | 10YR 3/2 | 100 | - | - | - | - | Silt loam | |
| 12-18" | 10YR 4/4 | 80 | 10YR 5/6 | 20 | C | M | 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)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present? Yes _____ No ✓**

Remarks:

No hydric soil indicator observed.

## HYDROLOGY

**Wetland Hydrology Indicators:**

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

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

Secondary Indicators (2 or more required)

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

**Field Observations:**

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

**Wetland Hydrology Present? Yes _____ No ✓**

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

Remarks:

No primary or secondary indicator of wetland hydrology observed.

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

Project/Site: Puyallup Senior Living City/County: Puyallup, Pierce Sampling Date: 12-9-13

Applicant/Owner: Wesley Homes State: WA Sampling Point: DP-8

Investigator(s): Jim Carsner Section, Township, Range: T19N,R04E, S03

Landform (hillslope, terrace, etc.): HIllslope Local relief (concave, convex, none): None Slope (%): 4%

Subregion (LRR): A - Northwest Forest and Coast Lat: 47.15806 Long: -122.28354 Datum: WGS84

Soil Map Unit Name: Everett gravelly sandy loam, 0 - to 6 percent slopes NWI classification: N/A

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ✓ | No _____ | **Is the Sampled Area within a Wetland?** Yes ✓ No _____ |
| Hydric Soil Present? | Yes ✓ | No _____ | |
| Wetland Hydrology Present? | Yes ✓ | No _____ | |

Remarks:

Data plot downslope of Wetland Flag C1. All three wetland criteria observed.

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 30' radius) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | _____ = Total Cover | | |
| **Sapling/Shrub Stratum (Plot size: 15' radius)** | | | |
| 1. Rubus spectabilis | 80 | Yes | FAC |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 80 = Total Cover | | |
| **Herb Stratum (Plot size: 5' radius)** | | | |
| 1. Athyrium felix-femina | 15 | Yes | FAC |
| 2. Urtica dioica | 5 | Yes | FAC |
| 3. Galium aparine | 1 | No | FACU |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| | 21 = Total Cover | | |
| **Woody Vine Stratum (Plot size: 15' radius)** | | | |
| 1. | | | |
| 2. | | | |
| | _____ = Total Cover | | |

% Bare Ground in Herb Stratum 79

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: |
|---|---|
| OBL species _____ | x 1 = _____ |
| FACW species _____ | x 2 = _____ |
| FAC species _____ | x 3 = _____ |
| FACU species _____ | x 4 = _____ |
| UPL species _____ | x 5 = _____ |
| Column Totals: _____ (A) | _____ (B) |

Prevalence Index = B/A = _____

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid Test for Hydrophytic Vegetation

✓ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

**Hydrophytic Vegetation Present?** Yes ✓ No _____

Remarks:

Dominance Test meets hydrophytic vegetation criteria.

## SOIL

Sampling Point: DP-8

**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 Features % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-8" | 10YR 3/2 | 100 | | | | | silt loam | |
| 8-15" | 10YR 4/2 | 70 | 10YR 5/6 | 30 | C | M | Sandy loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

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

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

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

**Indicators for Problematic Hydric Soils[3]:**

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

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

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

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

Remarks:

Hydric soil depleted below dark surface meets A11 and depleted matrix (F3) criteria.

## HYDROLOGY

**Wetland Hydrology Indicators:**

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

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

Secondary Indicators (2 or more required)

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

**Field Observations:**

Surface Water Present? Yes ___ No ✓ Depth (inches): _____

Water Table Present? Yes ✓ No ___ Depth (inches): 1"

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): 0"

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

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

Remarks:

Primary wetland hydrology indicators observed.

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

Project/Site: Puyallup Senior Living City/County: Puyallup, Pierce Sampling Date: 12-9-13

Applicant/Owner: Wesley Homes State: WA Sampling Point: DP-9

Investigator(s): Jim Carsner Section, Township, Range: T19N,R04E, S03

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0%

Subregion (LRR): A - Northwest Forest and Coast Lat: 47.15674 Long: -122.28320 Datum: WGS84

Soil Map Unit Name: Everett gravelly sandy loam, 0 - to 6 percent slopes NWI classification: N/A

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ✓ | No _____ | **Is the Sampled Area within a Wetland?** Yes ✓ No _____ |
| Hydric Soil Present? | Yes ✓ | No _____ | |
| Wetland Hydrology Present? | Yes ✓ | No _____ | |

Remarks:

Data plot downslope of Wetland Flag B17. All three wetland criteria observed.

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 30' radius) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. Alnus rubra | 100 | Yes | FAC |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | 100 | = Total Cover | |
| **Sapling/Shrub Stratum** (Plot size: 15' radius) | | | |
| 1. Spirea douglasii | 50 | Yes | FACW |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 50 | = Total Cover | |
| **Herb Stratum** (Plot size: 5' radius) | | | |
| 1. Ranunculus repens | 20 | Yes | FAC |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| | 20 | = Total Cover | |
| **Woody Vine Stratum** (Plot size: 15' radius) | | | |
| 1. | | | |
| 2. | | | |
| | | = Total Cover | |

% Bare Ground in Herb Stratum 80

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: |
|---|---|
| OBL species _____ | x 1 = _____ |
| FACW species _____ | x 2 = _____ |
| FAC species _____ | x 3 = _____ |
| FACU species _____ | x 4 = _____ |
| UPL species _____ | x 5 = _____ |
| Column Totals: _____ (A) | _____ (B) |

Prevalence Index = B/A = _____

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid Test for Hydrophytic Vegetation

✓ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

**Hydrophytic Vegetation Present?** Yes ✓ No _____

Remarks:

Dominance Test meets hydrophytic vegetation criteria.

## SOIL

Sampling Point: DP-9

**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 Features % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-3" | - | - | - | - | - | - | Duff | |
| 3-7" | 10YR 3/3 | 100 | - | - | - | - | Sandy loam | |
| 7-18" | 10YR 3/1 | 94 | 10YR 4/4 | 5 | C | M | Sandy loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

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

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

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

**Indicators for Problematic Hydric Soils[3]:**

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

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

**Restrictive Layer (if present):**

Type: Compacted sand/silt

Depth (inches): 13"

**Hydric Soil Present?** Yes ✓ No ___

Remarks:

Hydric soil with redox dark surface (F6) observed.

## HYDROLOGY

**Wetland Hydrology Indicators:**

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

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

Secondary Indicators (2 or more required)

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

**Field Observations:**

Surface Water Present? Yes ___ No ✓ Depth (inches): ___

Water Table Present? Yes ✓ No ___ Depth (inches): 3"

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): 0"

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

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

Remarks:

Primary indicators of wetland hydrology observed.

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

Project/Site: Puyallup Senior Living City/County: Puyallup, Pierce Sampling Date: 12-9-13

Applicant/Owner: Wesley Homes State: WA Sampling Point: DP-10

Investigator(s): Jim Carsner Section, Township, Range: T19N,R04E, S03

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 0%

Subregion (LRR): A - Northwest Forest and Coast Lat: 47.15665 Long: -122.28322 Datum: WGS84

Soil Map Unit Name: Everett gravelly sandy loam, 0 - to 6 percent slopes NWI classification: N/A

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes _____ | No ✓ | **Is the Sampled Area within a Wetland?** Yes _____ No ✓ |
| Hydric Soil Present? | Yes _____ | No ✓ | |
| Wetland Hydrology Present? | Yes _____ | No ✓ | |

Remarks:

Data plot upslope of Wetland Flag B17. Not all three wetland criteria observed.

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 30' radius) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. Alnus rubra | 80 | Yes | FAC |
| 2. Populus balsamifera | 10 | No | FAC |
| 3. | | | |
| 4. | | | |
| | 90 | = Total Cover | |
| **Sapling/Shrub Stratum** (Plot size: 15' radius) | | | |
| 1. Populus balsamifera | 25 | Yes | FAC |
| 2. Alnus rubra | 25 | Yes | FAC |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 50 | = Total Cover | |
| **Herb Stratum** (Plot size: 5' radius) | | | |
| 1. Rubus ursinus | 25 | Yes | FACU |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| | 25 | = Total Cover | |
| **Woody Vine Stratum** (Plot size: 15' radius) | | | |
| 1. Rubus armeniacus | 30 | Yes | FACU |
| 2. Rubus laciniata | 10 | Yes | FACU |
| | 40 | = 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: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | 0 | x 1 = | 0 |
| FACW species | 0 | x 2 = | 0 |
| FAC species | 140 | x 3 = | 420 |
| FACU species | 65 | x 4 = | 260 |
| UPL species | 0 | x 5 = | 0 |
| Column Totals: | 205 (A) | | 680 (B) |

Prevalence Index = B/A = 3.3

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

**Hydrophytic Vegetation Present?** Yes _____ No ✓

Remarks:

Vegetation does not meet Dominance Test or Prevalence Index; therefore, hydrophytic vegetation criteria is not met.

## SOIL

Sampling Point: DP-10

**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 Features % | Redox Features Type[1] | Redox Features Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-8" | 10YR 2/2 | 100 | - | - | - | - | Sandy loam | |
| 8-16" | 10YR 3/3 | 100 | - | - | - | - | Sand | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

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

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

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

**Indicators for Problematic Hydric Soils[3]:**

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

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

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present? Yes _____ No ✓**

Remarks:

No hydric soil indicator observed.

## HYDROLOGY

**Wetland Hydrology Indicators:**

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

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

Secondary Indicators (2 or more required)

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

**Field Observations:**

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

**Wetland Hydrology Present? Yes _____ No ✓**

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

Remarks:

No primary or secondary indicator of wetland hydrology observed.

# Appendix E — Wetland Rating Forms

Wetland name or number A

# WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users
Updated Oct. 2008 with the new WDFW definitions for priority habitats

Name of wetland (if known): A Date of site visit: 12/06/2013

Rated by: Jim Carsner Trained by Ecology? Yes X No Date of training: 5/2007

SEC: 3 TWNSHP: 19N RNGE: 4E Is S/T/R in Appendix D? Yes No X

**Map of wetland unit: Figure 1 Estimated size 1.35 acres**

## SUMMARY OF RATING

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

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

| | |
|---|---|
| Score for Water Quality Functions | 2 |
| Score for Hydrologic Functions | 6 |
| Score for Habitat Functions | 16 |
| TOTAL Score for Functions | 24 |

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

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

**Summary of basic information about the wetland unit.**

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

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

| Check List for Wetlands that Need Additional Protection (in addition to the protection recommended for its category) | YES | NO |
|---|---|---|
| SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered **animal or plant** species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database. | | 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 1 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 in to those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Wetland name or number A

## Classification of Vegetated Wetlands for Western Washington

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

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

2. The entire wetland unit is flat and precipitation is only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.
   NO – go to 3 **YES** – The wetland class is **Flats**
   If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

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

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

5. Does the entire wetland meet all of the following criteria?
   _____ The unit is in a valley or stream channel where it gets inundated by overbank flooding from that stream or river.
   _____ The overbank flooding occurs at least once every two years.
   NOTE: *The riverine unit can contain depressions that are filled with water when the river is not flooding..*
   NO – go to 6 **YES** – The wetland class is **Riverine**

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time of the year. This means that any outlet, if present is higher than the interior of the wetland.
   NO – go to 7 **YES** – The wetland class is **Depressional**

7. Is the entire wetland located in a very flat area with no obvious depression and no overbank flooding. The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.
   No – go to 8 YES – The wetland class is Depressional

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the class listed in column 2 is less than 10% of the unit, classify the wetland using the class that represents more than 90% of the total area.

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

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

Wetland name or number A

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

Wetland name or number A

| | | |
|---|---|---|
| **D 4** | **Does the wetland have the <u>opportunity</u> to reduce flooding and erosion?**<br>Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. *Note which of the following indicators of opportunity apply.*<br>____ Wetland is in a headwater of a river or stream that has flooding problems.<br>____ Wetland drains to a river or stream that has flooding problems<br>____ Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems<br>____ Other _____<br>**YES** multiplier is 2 **NO** multiplier is 1 | *(see p. 49)*<br>Multiplier<br>_____ |
| ◆ | **<u>TOTAL</u> – Hydrologic Functions** Multiply the score from D3 by D4; then ***add score to table on p. 1*** | |

**Comments:**

Wetland name or number A

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

**Comments:**

Wetland name or number A

| L | Lake-fringe Wetlands | Points |
|---|---|---|
| | WATER QUALITY FUNCTIONS – Indicators that the wetland unit functions to improve water quality. | (only 1 score per box) |
| **L 1** | **Does the wetland unit have the <u>potential</u> to improve water quality?** *(see p.59)* | |
| | L 1.1 Average width of vegetation along the lakeshore (use polygons of Cowardin classes):<br>• Vegetation is more than 33 ft. (10m) wide ..... points = 6<br>• Vegetation is more than 16 ft.(5m) wide and < 33 ft ..... points = 3<br>• Vegetation is more than 6 ft. (2m) wide and < 16 ft ..... points = 1<br>• Vegetation is less than 6 ft. wide..... points = 0<br>**Map of Cowardin classes with widths marked** | **Figure ___** |
| | L 1.2 Characteristics of the vegetation in the wetland: *Choose the appropriate description that results in the highest points, and do not include any open water in your estimate of coverage. The herbaceous plants can be either the dominant form or as an understory in a shrub or forest community. These are not Cowardin classes. Area of Cover is total cover in the unit, but it can be in patches. NOTE: Herbaceous does not include aquatic bed.*<br>• Cover of herbaceous plants is > 90% of the vegetated area..... points = 6<br>• Cover of herbaceous plants is > 2/3 of the vegetated area..... points = 4<br>• Cover of herbaceous plants is > 1/3 of the vegetated area..... points = 3<br>• Other vegetation that is not aquatic bed or herbaceous covers > 2/3 of the unit ..... points = 3<br>• Other vegetation that is not aquatic bed in > 1/3 vegetated area ..... points = 1<br>• Aquatic bed cover and open water > 2/3 of the unit..... points = 0<br>**Map with polygons of different vegetation types** | **Figure ___** |
| | *Add the points in the boxes above* | |
| **L 2** | **Does the wetland have the <u>opportunity</u> to improve water quality?**<br>Answer YES if you know or believe there are pollutants in the lake water, or polluted surface water flowing through the unit to the lake. *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.*<br>____ Wetland is along the shores of a lake or reservoir that does not meet water quality standards<br>____ Grazing in the wetland or within 150 ft<br>____ Polluted water discharges to wetland along upland edge<br>____ Tilled fields or orchards within 150 ft. of wetland<br>____ Residential or urban areas are within 150 ft. of wetland<br>____ Parks with grassy areas that are maintained, ballfields, golf courses (all within 150 ft. of lake shore)<br>____ Power boats with gasoline or diesel engines use the lake<br>____ Other _____<br>**YES** multiplier is 2 **NO** multiplier is 1 | *(see p.61)*<br>Multiplier<br>_____ |
| ◆ | **<u>TOTAL</u> – Water Quality Functions** Multiply the score from L1 by L2; then ***add score to table on p. 1*** | |
| | HYDROLOGIC FUNCTIONS – Indicators that wetland functions to reduce shoreline erosion. | |
| **L 3** | **Does the wetland have the <u>potential</u> to reduce shoreline erosion?** | *(see p.62)* |
| | L 3 Average width and characteristics of vegetation along the lakeshore *(do not include aquatic bed): (choose the highest scoring description that matches conditions in the wetland)*<br>• 3/4 of distance is shrubs or forest at least 33 ft. (10m) wide ..... points = 6<br>• 3/4 of distance is shrubs or forest at least 6 ft. (2m) wide. ..... points = 4<br>• 1/4 of distance is shrubs or forest at least 33 ft. (10m) wide. ..... points = 4<br>• Vegetation is at least 6 ft. (2m) wide (any type except aquatic bed)..... points = 2<br>• Vegetation is less than 6 ft. (2m) wide (any type except aquatic bed) ..... points = 0<br>**Aerial photo or map with Cowardin vegetation classes** | **Figure ___** |
| | *Record the points in the boxes above* | |
| **L 4** | **Does the wetland have the <u>opportunity</u> to reduce erosion?**<br>Are there features along the shore that will be impacted if the shoreline erodes? *Note which of the following conditions apply.*<br>____ There are human structures and activities along the upland edge of the wetland (buildings, fields) that can be damaged by erosion.<br>____ There are undisturbed natural resources along the upland edge of the wetland (e.g. mature forests, other wetlands) that can be damaged by shoreline erosion.<br>____ Other _____<br>**YES** multiplier is 2 **NO** multiplier is 1 | *(see p. 64)*<br>Multiplier<br>_____ |
| ◆ | **<u>TOTAL</u> – Hydrologic Functions** Multiply the score from L3 by L4; then ***add score to table on p. 1*** | |

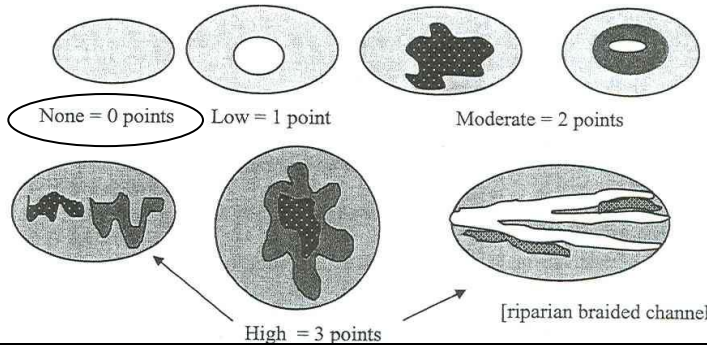
**Comments:**

Wetland name or number A

| S | Slope Wetlands | Points |
|---|---|---|
| | WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality. | (only 1 score per box) |
| **S 1** | **Does the wetland have the potential to improve water quality?** | *(see p.64)* |
| | S 1.1 Characteristics of average slope of unit:<br>• Slope is 1% or less *(a 1% slope has a 1 ft. vertical drop in elevation for every 100 ft. horizontal distance)*..... points = 3<br>• Slope is 1% - 2% ..... points = 2<br>• Slope is 2% - 5%. ..... points = 1<br>• Slope is greater than 5% (7.8%) ..... points = 0 | 0 |
| | S 1.2 The soil 2 inches below the surface (or duff layer) is clay, organic *(Use NRCS definitions).*<br>**YES** = 3 points **NO** = 0 points | 0 |
| | S 1.3 Characteristics of the vegetation in the wetland that trap sediments and pollutants: *Choose the points appropriate for the description that best fits the vegetation in the wetland. Dense vegetation means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 inches.*<br>• Dense, uncut, herbaceous vegetation > 90% of the wetland area ..... points = 6<br>• Dense, uncut, herbaceous vegetation > 1/2 of area ..... points = 3<br>• Dense, woody, vegetation > 1/2 of area..... points = 2<br>• Dense, uncut, herbaceous vegetation > 1/4 of area ..... points = 1<br>• Does not meet any of the criteria above for vegetation ..... points = 0<br>**Aerial photo or map with vegetation polygons** | **Figure** ___<br>**2** |
| | **Total for S 1** *Add the points in the boxes above* | 2 |
| **S 2** | **Does the wetland have the opportunity to improve water quality?**<br>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.*<br>____ Grazing in the wetland or within 150 ft<br>____ Untreated stormwater discharges to wetland<br>____ Tilled fields, logging, or orchards within 150 ft. of wetland<br>____ Residential, urban areas, or golf courses are within 150 ft. upslope of wetland<br>____ Other<br>**YES** multiplier is 2 **NO** multiplier is 1 | *(see p. 67)*<br>Multiplier<br>1 |
| ◆ | **TOTAL – Water Quality Functions** Multiply the score from S1 by S2; then ***add score to table on p. 1*** | 2 |
| | HYDROLOGIC FUNCTIONS – Indicators that wetland functions to reduce flooding and stream erosion. | |
| **S 3** | **Does the wetland have the potential to reduce flooding and stream erosion?** | *(see p.68)* |
| | S 3.1 Characteristics of vegetation that reduce the velocity of surface flows during storms: *Choose the points appropriate for the description that best fits conditions in the wetland (stems of plants should be thick enough (usually > 1/8in), or dense enough to remain erect during surface flows).*<br>• Dense, uncut, **rigid** vegetation covers > 90% of the area of the wetland ..... points = 6<br>• Dense, uncut, **rigid** vegetation> 1/2 area of wetland ..... points = 3<br>• Dense, uncut, **rigid** vegetation > 1/4 area. ..... points = 1<br>• More than 1/4 of area is grazed, mowed, tilled, or vegetation is not rigid ..... points = 0 | 6 |
| | S 3.2 Characteristics of slope wetland that holds back small amounts of flood flows.<br>The slope has small surface depressions that can retain water over at least 10% of its area.<br>**YES** = 2 points **NO** = 0 points | 0 |
| | Slope of 7.8 percent has little opportunity to retain water. Add the points in the boxes above | 6 |
| **S 4** | **Does the wetland have the opportunity to reduce flooding and erosion?**<br>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.*<br>____ Wetland has surface runoff that drains to a river or stream that has flooding problems<br>____ Other _____<br>*(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)*<br>**YES** multiplier is 2 **NO** multiplier is 1 | *(see p. 70)*<br>Multiplier<br>1 |
| ◆ | **TOTAL – Hydrologic Functions** Multiply the score from S3 by S4; then ***add score to table on p. 1*** | 6 |

**Comments:** S4: Water drains to an offsite constructed stormwater drainageway that flows into Bradley Lake. Bradley Lake has a control structure to maintain water levels within the lake and regulate the outfall, controlling downstream flooding.

Wetland name or number A

| *These questions apply to wetlands of all HGM classes.* | | Points |
|---|---|---|
| | HABITAT FUNCTIONS – Indicators that wetland functions to provide important habitat. | (only 1 score per box) |
| **H 1** | **Does the wetland have the <u>potential</u> to provide habitat for many species?** | |
| | H 1.1 <u>Vegetation structure</u> *(see P. 72)*:<br>*Check the types of vegetation classes present (as defined by Cowardin) – Size threshold for each class is 1/4 acre or more than 10% of the area if unit is smaller than 2.5 acres.*<br>____ Aquatic Bed<br>____ Emergent plants<br>____ Scrub/shrub (areas where shrubs have > 30% cover)<br>__X__ Forested (areas where trees have > 30% cover)<br>*If the unit has a forested class check if:*<br>__ 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.<br>*Add the number of vegetation types that qualify. If you have:* **Map of Cowardin vegetation classes**<br>4 structures or more ..... points = 4 — 3 structures ..... points = 2<br>2 structures ..... points = 1 — 1 structure ..... points = 0 | **Figure ___**<br><br>**0** |
| | H 1.2 <u>Hydroperiods</u> *(see p.73)*:<br>*Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or 1/4 acre to count (see text for descriptions of hydroperiods).*<br>____ Permanently flooded or inundated — 4 or more types present points = 3<br>____ Seasonally flooded or inundated — 3 or more types present ..... points = 2<br>____ Occasionally flooded or inundated — 2 types present ..... points = 1<br>__X__ Saturated only — 1 type present ..... points = 0<br>____ Permanently flowing stream or river in, or adjacent to, the wetland<br>__X__ Seasonally flowing stream in, or adjacent to, the wetland<br>____ **Lake-fringe wetland ..... = 2 points**<br>____ **Freshwater tidal wetland ..... = 2 points** **Map of hydroperiods** | **Figure ___**<br><br>**1** |
| | H 1.3 <u>Richness of Plant Species</u> *(see p. 75)*:<br>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)*<br>*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<br>5 – 19 species ..... points = 1<br>< 5 species ..... points = 0<br>List species below if you want to:<br>_____<br>_____<br>_____<br>_____ | 1 |
| | H 1.4 Interspersion of Habitats *(see p. 76)*:<br>Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.<br>  <br><br>Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always "high".<br>**Use map of Cowardin classes.** | **Figure ___**<br><br>**0** |
| | H 1.5 <u>Special Habitat Features</u> *(see p. 77)*:<br>*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.*<br>__X__ Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft. long)<br>__X__ Standing snags (diameter at the bottom > 4 inches) in the wetland<br>____ 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)<br>____ Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)*<br>____ At least 1/4 acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)*<br>__X__ Invasive plants cover less than 25% of the wetland area in each stratum of plants<br>*NOTE: The 20% stated in early printings of the manual on page 78 is an error.* | 3 |
| | **H 1 TOTAL Score** – potential for providing habitat *Add the points in the column above* | 5 |

Wetland name or number A

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

**Comments:**

| | | |
|---|---|---|
| | H 2.3 Near or adjacent to other priority habitats listed by WDFW (see p. 82): *(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 )*<br>Which of the following priority habitats are within 330 ft. (100m) of the wetland unit?<br>*NOTE: the connections do not have to be relatively undisturbed.*<br>____ **Aspen Stands:** Pure or mixed stands of aspen greater than 0.4 ha (1 acre).<br>____ **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*).<br>____ **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.<br>__X__ **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%; 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.<br>____ **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*).<br>____ **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.<br>____ **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*).<br>____ **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.<br>____ **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).*<br>____ **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.<br>____ **Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft.<br>____ **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.<br>__**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.<br>If wetland has **3 or more** priority habitats **= 4 points**<br>If wetland has **2** priority habitats = **3 points**<br>If wetland has **1** priority habitat **= 1 point** No habitats = 0 points<br>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) | 3 |
| | H 2.4 Wetland Landscape: *Choose the **one** description of the landscape around the wetland that best fits (see p. 84)*<br>• There are at least 3 other wetlands within 1/2 mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development.....points = 5<br>• The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within 1/2 mile .....points = 5<br>• There are at least 3 other wetlands within 1/2 mile, BUT the connections between them are disturbed. .....points = 3<br>• The wetland fringe on a lake **with** disturbance and there are 3 other lake-fringe wetlands within 1/2 mile .....points = 3<br>• There is at least 1 wetland within 1/2 mile .....points = 2<br>• There are no wetlands within 1/2 mile.....points = 0 | 5 |
| | **H 2** TOTAL Score – opportunity for providing habitat *Add the scores from H2.1, H2.2, H2.3, H2.4* | 11 |
| | *TOTAL for H 1 from page 8* | 5 |
| ◆ | **Total Score for Habitat Functions** Add the points for H 1 and H 2; then ***record the result on p. 1*** | 16 |

**Comments:**

Wetland name or number A

## CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

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

| | | |
|---|---|---|
| | **Wetland Type** – *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.* | |
| **SC1** | **Estuarine wetlands?** *(see p.86)*<br>Does the wetland unit meet the following criteria for Estuarine wetlands?<br>____ The dominant water regime is tidal,<br>____ Vegetated, and<br>____ With a salinity greater than 0.5 ppt.<br>**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. 1** |
| | SC 1.2 Is the wetland at least 1 acre in size and meets at least two of the following conditions?<br>**YES** = Category I **NO** = Category II<br>____ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp,. are only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category 1. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre.<br>____ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland<br>____ The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. | **Cat. I**<br>**Cat. II**<br>**Dual Rating I/II** |
| **SC2** | **Natural Heritage Wetlands** *(see p. 87)*<br>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.<br>SC 2.1 Is the wetland being rated in a Section/Township/Range that contains a natural heritage wetland? *(This question is used to screen out most sites before you need to contact WNHP/DNR.)*<br>S/T/R information from Appendix D X or accessed from WNHP/DNR web site _____<br>**YES** _____ Contact WNHP/DNR (see p. 79) and go to SC 2.2 **NO** X<br>SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as a site with state threatened or endangered plant species?<br>**YES** = Category 1 **NO** _____ not a Heritage Wetland | **Cat I** |
| **SC3** | **Bogs** *(see p. 87)*<br>Does the wetland **(or any part of the unit)** meet both the criteria for soils and vegetation in bogs? Use the key below to identify if the wetland is a bog. ***If you answer yes you will still need to rate the wetland based on its function.***<br>1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of soil profile? (~~See Appendix B~~ for a field key to identify organic soils)? **YES** = go to question 3 **NO** = go to question 2<br>2. Does the wetland have organic soils, either peats or mucks that ~~are less than 16 inches~~ deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, ~~or that are floating on a lake or~~ pond? **YES** = go to question 3 **NO** = is not a bog for purpose of rating<br>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)?<br>**YES** = Is a bog for purpose of rating **NO** = go to question 4<br>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.<br>4. Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine. WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cover*)?<br>**YES** = Category I **NO** = Is not a bog for purpose of rating | **Cat. I** |

Wetland name or number A

| | | |
|---|---|---|
| **SC4** | **Forested Wetlands** *(see p. 90)*<br>Does the wetland have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? *If you answer yes you will still need to rate the wetland based on its function.*<br>____ **Old-growth forests**: (west of Cascade Crest) Stands of at least two three species forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm or more).<br>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.<br>____ **Mature forests**: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have an average diameters (dbh) exceeding 21 inches (53 cm); crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth.<br>**YES** = Category I **NO** = __X__ not a forested wetland with special characteristics | **Cat. I** |
| **SC5** | **Wetlands in Coastal Lagoons** *(see p. 91)*<br>Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?<br>____ 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.<br>____ 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.)*<br>**YES** = Go to SC 5.1 **NO** = __X__ not a wetland in a coastal lagoon<br>SC 5.1 Does the wetland meet all of the following three conditions?<br>____ 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).<br>____ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland.<br>____ The wetland is larger than 1/10 acre (4350 square ft.)<br>**YES** = Category I **NO** = Category II | **Cat. I**<br>**Cat. II** |
| **SC6** | **Interdunal Wetlands** *(see p. 93)*<br>Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)?<br>**YES** = Go to SC 6.1 **NO** = __X__ not an interdunal wetland for rating<br>***If you answer yes you will still need to rate the wetland based on its functions.***<br>In practical terms that means the following geographic areas:<br>• Long Beach Peninsula -- lands west of SR 103<br>• Grayland-Westport -- lands west of SR 105<br>• Ocean Shores-Copalis – lands west of SR 115 and SR 109<br>SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is one acre or larger?<br>**YES** = Category II **NO** = go to SC 6.2<br>SC 6.2 Is the wetland between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre?<br>**YES** = Category III | **Cat. II**<br>**Cat. III** |
| ◆ | **Category of wetland based on Special Characteristics**<br>*Choose the "highest" rating if wetland falls into several categories, and record on p. 1.*<br>If you answered **NO** for all types enter "Not Applicable" on p. 1 | **NA** |

**Comments:**

Wetland name or number B

# 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): B Date of site visit: 12/06/2013

Rated by: Jim Carsner Trained by Ecology? Yes X No Date of training: 5/2007

SEC: 3 TWNSHP: 19N RNGE: 4E Is S/T/R in Appendix D? Yes No X

**Map of wetland unit: Figure 1 Estimated size 0.13 acre**

## 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 | 10 |
| Score for Habitat Functions | 16 |
| TOTAL Score for Functions | 46 |

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

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

**Summary of basic information about the wetland unit.**

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

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

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

| Check List for Wetlands that Need Additional Protection (in addition to the protection recommended for its category) | YES | NO |
|---|---|---|
| SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered **animal or plant** species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database. | | 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 1 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 in to those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Wetland name or number B

## Classification of Vegetated Wetlands for Western Washington

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

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

2. The entire wetland unit is flat and precipitation is only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.
   NO – go to 3 **YES** – The wetland class is **Flats**
   If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

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

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

5. Does the entire wetland meet all of the following criteria?
   _____ The unit is in a valley or stream channel where it gets inundated by overbank flooding from that stream or river.
   _____ The overbank flooding occurs at least once every two years.
   NOTE: *The riverine unit can contain depressions that are filled with water when the river is not flooding..*
   NO – go to 6 **YES** – The wetland class is **Riverine**

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time of the year. This means that any outlet, if present is higher than the interior of the wetland.
   NO – go to 7 **YES** – The wetland class is **Depressional**

7. Is the entire wetland located in a very flat area with no obvious depression and no overbank flooding. The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.
   No – go to 8 YES – The wetland class is Depressional

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the class listed in column 2 is less than 10% of the unit, classify the wetland using the class that represents more than 90% of the total area.

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

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

Wetland name or number B

| D | Depressional and Flat Wetlands | Points |
|---|---|---|
| | WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality. | (only 1 score per box) |
| **D 1** | **Does the wetland have the <u>potential</u> to improve water quality?** | *(see p.38)* |
| | D 1.1 Characteristics of surface water flows out of the wetland:<br>• Unit is a depression with no surface water leaving it (no outlet) ..... points = 3<br>• Unit has an intermittently flowing, OR highly constricted, permanently flowing outlet ..... points = 2<br>• Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) ..... points = 1<br>• Unit is a "flat" depression (Q.7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch..... points = 1<br>*(If ditch is not permanently flowing treat unit as "intermittently flowing")* **Provide photo or drawing** | **Figure ___**<br>**3** |
| | D 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic (*use NRCS definitions*)<br>**YES** points = 4 **NO** points = 0 | **0** |
| | D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class):<br>• Wetland has persistent, ungrazed vegetation > = 95% of area..... points = 5<br>• Wetland has persistent, ungrazed vegetation > = 1/2 of area..... points = 3<br>• Wetland has persistent, ungrazed vegetation > = 1/10 of area..... points = 1<br>• Wetland has persistent, ungrazed vegetation < 1/10 of area ..... points = 0<br>**Map of Cowardin vegetation classes** | **Figure ___**<br>**3** |
| | D 1.4 Characteristics of seasonal ponding or inundation: *This is the area of the wetland that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 years.*<br>• Area seasonally ponded is > 1/2 total area of wetland ..... points = 4<br>• Area seasonally ponded is > 1/4 total area of wetland ..... points = 2<br>• Area seasonally ponded is < 1/4 total area of wetland ..... points = 0<br>**Map of Hydroperiods** | **Figure ___**<br>**4** |
| | **Total for D 1** *Add the points in the boxes above* | 10 |
| **D 2** | **Does the wetland have the <u>opportunity</u> to improve water quality?** | *(see p. 44)* |
| | 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.*<br>___ Grazing in the wetland or within 150 ft<br>___ Untreated stormwater discharges to wetland<br>___ Tilled fields or orchards within 150 ft. of wetland<br>___ A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging<br>**X** Residential, urban areas, golf courses are within 150 ft. of wetland<br>___ Wetland is fed by groundwater high in phosphorus or nitrogen<br>___ Other _____<br>**YES** multiplier is 2 **NO** multiplier is 1 | Multiplier<br>2 |
| ◆ | **<u>TOTAL</u> – Water Quality Functions** Multiply the score from D1 by D2; then ***add score to table on p. 1*** | 20 |
| | HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation. | |
| **D 3** | **Does the wetland have the <u>potential</u> to reduce flooding and erosion?** | *(see p.46)* |
| | D 3.1 Characteristics of surface water flows out of the wetland unit<br>• Unit is a depression with no surface water leaving it (no outlet) ..... points = 4<br>• Unit has an intermittently flowing, OR highly constricted permanently flowing outlet ..... points = 2<br>• Unit is a "flat" depression (Q.7 on key) or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch..... points = 1<br>*(If ditch is not permanently flowing treat unit as "intermittently flowing")*<br>• Unit has an unconstricted, or slightly constricted, surface outlet *(permanently flowing)* ..... points = 0 | 4 |
| | D 3.2 Depth of storage during wet periods. *Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry).*<br>• Marks of ponding are 3 ft. or more above the surface or bottom of the outlet ..... points = 7<br>• The wetland is a "headwater" wetland..... points = 5<br>• Marks of ponding between 2 ft. to < 3 ft. from surface or bottom of outlet ..... points = 5<br>• Marks are at least 0.5 ft. to < 2 ft. from surface or bottom of outlet..... points = 3<br>• Wetland is flat (yes to Q.2 or Q.7 on key)but has small depressions on the surface that trap water points = 1<br>• Marks of ponding less than 0.5 ft..... points = 0 | 3 |
| | D 3.3 Contribution of wetland unit to storage in the watershed: *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.*<br>• The area of the basin is less than 10 times the area of unit ..... points = 5<br>• The area of the basin is 10 to 100 times the area of the unit ..... points = 3<br>• The area of the basin is more than 100 times the area of the unit ..... points = 0<br>• Entire unit is in the FLATS class ..... points = 5 | 3 |
| | **Total for D 3** *Add the points in the boxes above* | 10 |

Wetland name or number B

| | | |
|---|---|---|
| **D 4** | **Does the wetland have the <u>opportunity</u> to reduce flooding and erosion?**<br>Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. *Note which of the following indicators of opportunity apply.*<br>____ Wetland is in a headwater of a river or stream that has flooding problems.<br>____ Wetland drains to a river or stream that has flooding problems<br>____ Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems<br>____ Other _____<br>**YES** multiplier is 2 **NO** multiplier is 1 | *(see p. 49)*<br><br>Multiplier<br><br>1 |
| ◆ | **<u>TOTAL</u> – Hydrologic Functions** Multiply the score from D3 by D4; then ***add score to table on p. 1*** | 10 |

**Comments:**

Wetland name or number B

| R | Riverine and Freshwater Tidal Fringe Wetlands | Points |
|---|---|---|
| | WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality. | (only 1 score per box) |
| **R 1** | **Does the wetland have the <u>potential</u> to improve water quality?** *(see p.52)* | |
| | R 1.1 Area of surface depressions within the riverine wetland that can trap sediments during a flooding event:<br>• Depressions cover > 3/4 area of wetland ..... points = 8<br>• Depressions cover > 1/2 area of wetland ..... points = 4<br>**(If depressions > 1/2 of area of unit draw polygons on aerial photo or map)**<br>• Depressions present but cover < 1/2 area of wetland. ..... points = 2<br>• No depressions present ..... points = 0 | **Figure ___** |
| | R 1.2 Characteristics of the vegetation in the unit (areas with >90% cover at person height):<br>• Trees or shrubs > 2/3 area of the unit ..... points = 8<br>• Trees or shrubs > 1/3 area of the wetland ..... points = 6<br>• Ungrazed, herbaceous plants > 2/3 area of unit ..... points = 6<br>• Ungrazed herbaceous plants > 1/3 area of unit ..... points = 3<br>• Trees, shrubs, and ungrazed herbaceous < 1/3 area of unit ..... points = 0<br>**Aerial photo or map showing polygons of different vegetation types** | **Figure ___** |
| | Add the points in the boxes above | |
| **R 2** | **Does the wetland have the <u>opportunity</u> to improve water quality?** *(see p. 53)*<br>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.*<br>____ Grazing in the wetland or within 150 ft<br>____ Untreated stormwater discharges to wetland<br>____ Tilled fields or orchards within 150 ft. of wetland<br>____ A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging<br>____ Residential, urban areas, golf courses are within 150 ft. of wetland<br>____ 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.<br>____ Other _____<br>**YES** multiplier is 2 **NO** multiplier is 1 | Multiplier<br>_____ |
| ◆ | **<u>TOTAL</u> – Water Quality Functions** Multiply the score from R1 by R2; then ***add score to table on p. 1*** | |
| | HYDROLOGIC FUNCTIONS – Indicators that wetland functions to reduce flooding and stream erosion. | |
| **R 3** | **Does the wetland have the <u>potential</u> to reduce flooding and erosion?** *(see p.54)* | |
| | R 3.1 Characteristics of the overbank storage the wetland provides: *Estimate the average width of the wetland perpendicular to the direction of the flow and the width of the stream or river channel (distance between banks). Calculate the ratio: (average width of unit) / (average width of stream between banks).*<br>• If the ratio is more than 20 ..... points = 9<br>• If the ratio is between 10 – 20 ..... points = 6<br>• If the ratio is 5- <10 ..... points = 4<br>• If the ratio is 1- <5 ..... points = 2<br>• If the ratio is < 1 ..... points = 1<br>**Aerial photo or map showing average widths** | **Figure ___** |
| | 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):*<br>• Forest or shrub for > 1/3 area OR herbaceous plants > 2/3 area ..... points = 7<br>• Forest or shrub for > 1/10 area OR herbaceous plants > 1/3 area ..... points = 4<br>• Vegetation does not meet above criteria ..... points = 0<br>**Aerial photo or map showing polygons of different vegetation types** | **Figure ___** |
| | *Add the points in the boxes above* | |
| **R 4** | **Does the wetland have the <u>opportunity</u> to reduce flooding and erosion?** *(see p.57)*<br>Answer YES if the wetland is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. *Note which of the following conditions apply.*<br>____ There are human structures and activities downstream (roads, buildings, bridges, farms) that can be damaged by flooding.<br>____ There are natural resources downstream (e.g. salmon redds) that can be damaged by flooding<br>____ Other _____<br>*(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)*<br>**YES** multiplier is 2 **NO** multiplier is 1 | Multiplier<br>_____ |
| ◆ | **<u>TOTAL</u> – Hydrologic Functions** Multiply the score from R3 by R4; then ***add score to table on p. 1*** | |

**Comments:**

Wetland name or number B

| L | Lake-fringe Wetlands | Points |
|---|---|---|
| | WATER QUALITY FUNCTIONS – Indicators that the wetland unit functions to improve water quality. | (only 1 score per box) |
| **L 1** | **Does the wetland unit have the <u>potential</u> to improve water quality?** *(see p.59)* | |
| | L 1.1 Average width of vegetation along the lakeshore (use polygons of Cowardin classes):<br>• Vegetation is more than 33 ft. (10m) wide ..... points = 6<br>• Vegetation is more than 16 ft.(5m) wide and < 33 ft ..... points = 3<br>• Vegetation is more than 6 ft. (2m) wide and < 16 ft ..... points = 1<br>• Vegetation is less than 6 ft. wide..... points = 0<br>**Map of Cowardin classes with widths marked** | **Figure ___** |
| | L 1.2 Characteristics of the vegetation in the wetland: *Choose the appropriate description that results in the highest points, and do not include any open water in your estimate of coverage. The herbaceous plants can be either the dominant form or as an understory in a shrub or forest community. These are not Cowardin classes. Area of Cover is total cover in the unit, but it can be in patches. NOTE: Herbaceous does not include aquatic bed.*<br>• Cover of herbaceous plants is > 90% of the vegetated area..... points = 6<br>• Cover of herbaceous plants is > 2/3 of the vegetated area..... points = 4<br>• Cover of herbaceous plants is > 1/3 of the vegetated area..... points = 3<br>• Other vegetation that is not aquatic bed or herbaceous covers > 2/3 of the unit ..... points = 3<br>• Other vegetation that is not aquatic bed in > 1/3 vegetated area ..... points = 1<br>• Aquatic bed cover and open water > 2/3 of the unit..... points = 0<br>**Map with polygons of different vegetation types** | **Figure ___** |
| | *Add the points in the boxes above* | |
| **L 2** | **Does the wetland have the <u>opportunity</u> to improve water quality?**<br>Answer YES if you know or believe there are pollutants in the lake water, or polluted surface water flowing through the unit to the lake. *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.*<br>____ Wetland is along the shores of a lake or reservoir that does not meet water quality standards<br>____ Grazing in the wetland or within 150 ft<br>____ Polluted water discharges to wetland along upland edge<br>____ Tilled fields or orchards within 150 ft. of wetland<br>____ Residential or urban areas are within 150 ft. of wetland<br>____ Parks with grassy areas that are maintained, ballfields, golf courses (all within 150 ft. of lake shore)<br>____ Power boats with gasoline or diesel engines use the lake<br>____ Other _____<br>**YES** multiplier is 2 **NO** multiplier is 1 | *(see p.61)*<br>Multiplier<br>_____ |
| ◆ | **<u>TOTAL</u> – Water Quality Functions** Multiply the score from L1 by L2; then ***add score to table on p. 1*** | |
| | HYDROLOGIC FUNCTIONS – Indicators that wetland functions to reduce shoreline erosion. | |
| **L 3** | **Does the wetland have the <u>potential</u> to reduce shoreline erosion?** | *(see p.62)* |
| | L 3 Average width and characteristics of vegetation along the lakeshore *(do not include aquatic bed): (choose the highest scoring description that matches conditions in the wetland)*<br>• 3/4 of distance is shrubs or forest at least 33 ft. (10m) wide ..... points = 6<br>• 3/4 of distance is shrubs or forest at least 6 ft. (2m) wide. ..... points = 4<br>• 1/4 of distance is shrubs or forest at least 33 ft. (10m) wide. ..... points = 4<br>• Vegetation is at least 6 ft. (2m) wide (any type except aquatic bed)..... points = 2<br>• Vegetation is less than 6 ft. (2m) wide (any type except aquatic bed) ..... points = 0<br>**Aerial photo or map with Cowardin vegetation classes** | **Figure ___** |
| | *Record the points in the boxes above* | |
| **L 4** | **Does the wetland have the <u>opportunity</u> to reduce erosion?**<br>Are there features along the shore that will be impacted if the shoreline erodes? *Note which of the following conditions apply.*<br>____ There are human structures and activities along the upland edge of the wetland (buildings, fields) that can be damaged by erosion.<br>____ There are undisturbed natural resources along the upland edge of the wetland (e.g. mature forests, other wetlands) that can be damaged by shoreline erosion.<br>____ Other _____<br>**YES** multiplier is 2 **NO** multiplier is 1 | *(see p. 64)*<br>Multiplier<br>_____ |
| ◆ | **<u>TOTAL</u> – Hydrologic Functions** Multiply the score from L3 by L4; then ***add score to table on p. 1*** | |

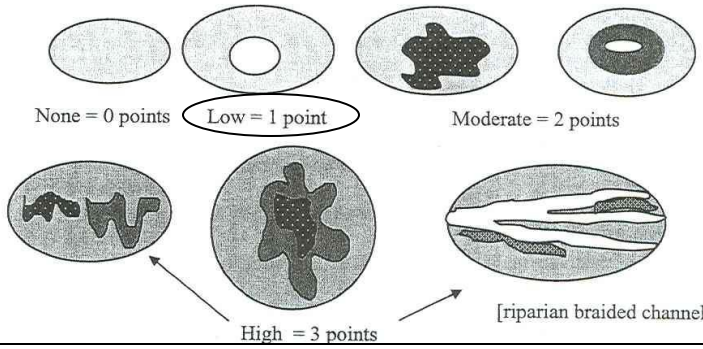
**Comments:**

Wetland name or number B

| S | Slope Wetlands | Points |
|---|---|---|
| | WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality. | (only 1 score per box) |
| **S 1** | **Does the wetland have the <u>potential</u> to improve water quality?** | *(see p.64)* |
| | S 1.1 Characteristics of average slope of unit:<br>• Slope is 1% or less *(a 1% slope has a 1 ft. vertical drop in elevation for every 100 ft. horizontal distance)*..... points = 3<br>• Slope is 1% - 2% ..... points = 2<br>• Slope is 2% - 5%. ..... points = 1<br>• Slope is greater than 5% ..... points = 0 | |
| | S 1.2 The soil 2 inches below the surface (or duff layer) is clay, organic *(Use NRCS definitions).*<br>**YES** = 3 points **NO** = 0 points | |
| | 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.*<br>• Dense, uncut, herbaceous vegetation > 90% of the wetland area..... points = 6<br>• Dense, uncut, herbaceous vegetation > 1/2 of area ..... points = 3<br>• Dense, woody, vegetation > 1/2 of area..... points = 2<br>• Dense, uncut, herbaceous vegetation > 1/4 of area ..... points = 1<br>• Does not meet any of the criteria above for vegetation ..... points = 0<br>**Aerial photo or map with vegetation polygons** | **Figure** ___ |
| | **Total for S 1** *Add the points in the boxes above* | |
| **S 2** | **Does the wetland have the <u>opportunity</u> to improve water quality?**<br>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.*<br>____ Grazing in the wetland or within 150 ft<br>____ Untreated stormwater discharges to wetland<br>____ Tilled fields, logging, or orchards within 150 ft. of wetland<br>____ Residential, urban areas, or golf courses are within 150 ft. upslope of wetland<br>____ Other _____<br>**YES** multiplier is 2 **NO** multiplier is 1 | *(see p. 67)*<br>Multiplier<br>____ |
| ◆ | **<u>TOTAL</u> – Water Quality Functions** Multiply the score from S1 by S2; then ***add score to table on p. 1*** | |
| | HYDROLOGIC FUNCTIONS – Indicators that wetland functions to reduce flooding and stream erosion. | |
| **S 3** | **Does the wetland have the <u>potential</u> to reduce flooding and stream erosion?** | *(see p.68)* |
| | S 3.1 Characteristics of vegetation that reduce the velocity of surface flows during storms: *Choose the points appropriate for the description that best fits conditions in the wetland (stems of plants should be thick enough (usually > 1/8in), or dense enough to remain erect during surface flows).*<br>• Dense, uncut, **rigid** vegetation covers > 90% of the area of the wetland ..... points = 6<br>• Dense, uncut, **rigid** vegetation> 1/2 area of wetland ..... points = 3<br>• Dense, uncut, **rigid** vegetation > 1/4 area..... points = 1<br>• More than 1/4 of area is grazed, mowed, tilled, or vegetation is not rigid ..... points = 0 | |
| | S 3.2 Characteristics of slope wetland that holds back small amounts of flood flows.<br>The slope has small surface depressions that can retain water over at least 10% of its area.<br>**YES** = 2 points **NO** = 0 points | |
| | Add the points in the boxes above | |
| **S 4** | **Does the wetland have the <u>opportunity</u> to reduce flooding and erosion?**<br>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.*<br>____ Wetland has surface runoff that drains to a river or stream that has flooding problems<br>____ Other _____<br>*(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)*<br>**YES** multiplier is 2 **NO** multiplier is 1 | *(see p. 70)*<br>Multiplier<br>____ |
| ◆ | **<u>TOTAL</u> – Hydrologic Functions** Multiply the score from S3 by S4; then ***add score to table on p. 1*** | |

**Comments:**

Wetland name or number B

| *These questions apply to wetlands of all HGM classes.* | | **Points** |
|---|---|---|
| | HABITAT FUNCTIONS – Indicators that wetland functions to provide important habitat. | (only 1 score per box) |
| **H 1** | **Does the wetland have the <u>potential</u> to provide habitat for many species?** | |
| | H 1.1 <u>Vegetation structure</u> *(see P. 72)*:<br>*Check the types of vegetation classes present (as defined by Cowardin) – Size threshold for each class is 1/4 acre or more than 10% of the area if unit is smaller than 2.5 acres.*<br>___ Aquatic Bed<br>_x_ Emergent plants<br>__X__ Scrub/shrub (areas where shrubs have > 30% cover)<br>___ Forested (areas where trees have > 30% cover)<br>*If the unit has a forested class check if:*<br>___ 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.<br>*Add the number of vegetation types that qualify. If you have:* **Map of Cowardin vegetation classes**<br>4 structures or more ..... points = 4 — 3 structures ..... points = 2<br>2 structures ..... points = 1 — 1 structure ..... points = 0 | **Figure ___**<br><br>**1** |
| | H 1.2 <u>Hydroperiods</u> *(see p.73)*:<br>*Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or 1/4 acre to count (see text for descriptions of hydroperiods).*<br>___ Permanently flooded or inundated — 4 or more types present points = 3<br>__X__ Seasonally flooded or inundated — ~~3 or more types present ..... points = 2~~<br>___ Occasionally flooded or inundated — 2 types present ..... points = 1<br>__X__ Saturated only — ~~1 type present ..... points = 0~~<br>___ Permanently flowing stream or river in, or adjacent to, the wetland<br>___ Seasonally flowing stream in, or adjacent to, the wetland<br>___ **Lake-fringe wetland ..... = 2 points**<br>___ **Freshwater tidal wetland ..... = 2 points** **Map of hydroperiods** | **Figure ___**<br><br>**1** |
| | H 1.3 <u>Richness of Plant Species</u> *(see p. 75)*:<br>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)*<br>*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~~<br>5 – 19 species ..... points = 1<br>~~< 5 species ..... points = 0~~<br>List species below if you want to:<br>_____<br>_____<br>_____<br>_____ | 1 |
| | H 1.4 Interspersion of Habitats *(see p. 76)*:<br>Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.<br>  <br><br>Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always "high".<br>**Use map of Cowardin classes.** | **Figure ___**<br><br>**1** |
| | H 1.5 <u>Special Habitat Features</u> *(see p. 77)*:<br>*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.*<br>__X__ Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft. long)<br>___ Standing snags (diameter at the bottom > 4 inches) in the wetland<br>___ 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)<br>___ Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)*<br>___ At least 1/4 acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)*<br>__X__ Invasive plants cover less than 25% of the wetland area in each stratum of plants<br>*NOTE: The 20% stated in early printings of the manual on page 78 is an error.* | 2 |
| | **H 1 TOTAL Score** – potential for providing habitat *Add the points in the column above* | 6 |

Wetland name or number B

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

**Comments:**

| | | |
|---|---|---|
| | H 2.3 Near or adjacent to other priority habitats listed by WDFW (see p. 82): *(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 )*<br>Which of the following priority habitats are within 330 ft. (100m) of the wetland unit?<br>*NOTE: the connections do not have to be relatively undisturbed.*<br>____ **Aspen Stands:** Pure or mixed stands of aspen greater than 0.4 ha (1 acre).<br>____ **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*).<br>____ **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.<br>____ **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%; 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.<br>____ **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*).<br>____ **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.<br>____ **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*).<br>____ **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.<br>____ **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).*<br>____ **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.<br>____ **Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft.<br>____ **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.<br>__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.<br>If wetland has **3 or more** priority habitats **= 4 points**<br>If wetland has **2** priority habitats = **3 points**<br>If wetland has **1** priority habitat **= 1 point** No habitats = 0 points<br>Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4) | 1 |
| | H 2.4 Wetland Landscape: *Choose the **one** description of the landscape around the wetland that best fits (see p. 84)*<br>• There are at least 3 other wetlands within 1/2 mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development.....points = 5<br>• The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within 1/2 mile .....points = 5<br>• There are at least 3 other wetlands within 1/2 mile, BUT the connections between them are disturbed. .....points = 3<br>• The wetland fringe on a lake **with** disturbance and there are 3 other lake-fringe wetlands within 1/2 mile .....points = 3<br>• There is at least 1 wetland within 1/2 mile .....points = 2<br>• There are no wetlands within 1/2 mile.....points = 0 | 5 |
| | **H 2** TOTAL Score – opportunity for providing habitat *Add the scores from H2.1, H2.2, H2.3, H2.4* | 10 |
| | *TOTAL for H 1 from page 8* | 6 |
| ◆ | **Total Score for Habitat Functions** Add the points for H 1 and H 2; then ***record the result on p. 1*** | 16 |

**Comments:**

Wetland name or number B

## CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

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

| | | |
|---|---|---|
| | **Wetland Type** – *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.* | |
| **SC1** | **Estuarine wetlands?** *(see p.86)*<br>Does the wetland unit meet the following criteria for Estuarine wetlands?<br>____ The dominant water regime is tidal,<br>____ Vegetated, and<br>____ With a salinity greater than 0.5 ppt.<br>**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. 1** |
| | SC 1.2 Is the wetland at least 1 acre in size and meets at least two of the following conditions?<br>**YES** = Category I **NO** = Category II<br>____ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp,. are only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category 1. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre.<br>____ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland<br>____ The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. | **Cat. I**<br>**Cat. II**<br>**Dual Rating I/II** |
| **SC2** | **Natural Heritage Wetlands** *(see p. 87)*<br>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.<br>SC 2.1 Is the wetland being rated in a Section/Township/Range that contains a natural heritage wetland? *(This question is used to screen out most sites before you need to contact WNHP/DNR.)*<br>S/T/R information from Appendix D X or accessed from WNHP/DNR web site _____<br>**YES** _____ Contact WNHP/DNR (see p. 79) and go to SC 2.2 **NO** X<br>SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as a site with state threatened or endangered plant species?<br>**YES** = Category 1 **NO** _____ not a Heritage Wetland | **Cat I** |
| **SC3** | **Bogs** *(see p. 87)*<br>Does the wetland **(or any part of the unit)** meet both the criteria for soils and vegetation in bogs? Use the key below to identify if the wetland is a bog. ***If you answer yes you will still need to rate the wetland based on its function.***<br>1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of soil profile? (See Appendix B for a field key to identify organic soils)? **YES** = go to question 3 **NO** = go to question 2<br>2. Does the wetland have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? **YES** = go to question 3 **NO** = is not a bog for purpose of rating<br>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)?<br>**YES** = Is a bog for purpose of rating **NO** = go to question 4<br>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.<br>4. Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine. WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cover*)?<br>**YES** = Category I **NO** = Is not a bog for purpose of rating | **Cat. I** |

Wetland name or number B

| | | |
|---|---|---|
| **SC4** | **Forested Wetlands** *(see p. 90)*<br>Does the wetland have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? *If you answer yes you will still need to rate the wetland based on its function.*<br>____ **Old-growth forests**: (west of Cascade Crest) Stands of at least two three species forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm or more).<br>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.<br>____ **Mature forests**: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have an average diameters (dbh) exceeding 21 inches (53 cm); crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth.<br>**YES** = Category I **NO** = __X__ not a forested wetland with special characteristics | **Cat. I** |
| **SC5** | **Wetlands in Coastal Lagoons** *(see p. 91)*<br>Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?<br>____ 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.<br>____ 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.)*<br>**YES** = Go to SC 5.1 **NO** = __X__ not a wetland in a coastal lagoon<br>SC 5.1 Does the wetland meet all of the following three conditions?<br>____ 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).<br>____ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland.<br>____ The wetland is larger than 1/10 acre (4350 square ft.)<br>**YES** = Category I **NO** = Category II | **Cat. I**<br>**Cat. II** |
| **SC6** | **Interdunal Wetlands** *(see p. 93)*<br>Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)?<br>**YES** = Go to SC 6.1 **NO** = __X__ not an interdunal wetland for rating<br>***If you answer yes you will still need to rate the wetland based on its functions.***<br>In practical terms that means the following geographic areas:<br>• Long Beach Peninsula -- lands west of SR 103<br>• Grayland-Westport -- lands west of SR 105<br>• Ocean Shores-Copalis – lands west of SR 115 and SR 109<br>SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is one acre or larger?<br>**YES** = Category II **NO** = go to SC 6.2<br>SC 6.2 Is the wetland between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre?<br>**YES** = Category III | **Cat. II**<br>**Cat. III** |
| ◆ | **Category of wetland based on Special Characteristics**<br>*Choose the "highest" rating if wetland falls into several categories, and record on p. 1.*<br>If you answered **NO** for all types enter "Not Applicable" on p. 1 | **NA** |

**Comments:**

Wetland name or number C

# 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): C Date of site visit: 12/06/2013

Rated by: Jim Carsner Trained by Ecology? Yes X No Date of training: 5/2007

SEC: 3 TWNSHP: 19N RNGE: 4E Is S/T/R in Appendix D? Yes No X

**Map of wetland unit: Figure 1 Estimated size 0.07 acre**

## SUMMARY OF RATING

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

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

| | |
|---|---|
| Score for Water Quality Functions | 2 |
| Score for Hydrologic Functions | 3 |
| Score for Habitat Functions | 18 |
| TOTAL Score for Functions | 23 |

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

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

**Summary of basic information about the wetland unit.**

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

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

| Check List for Wetlands that Need Additional Protection (in addition to the protection recommended for its category) | YES | NO |
|---|---|---|
| SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered **animal or plant** species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database. | | 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 1 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 in to those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Wetland name or number C

## Classification of Vegetated Wetlands for Western Washington

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

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

2. The entire wetland unit is flat and precipitation is only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.
   NO – go to 3 **YES** – The wetland class is **Flats**
   If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

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

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

5. Does the entire wetland meet all of the following criteria?
   _____ The unit is in a valley or stream channel where it gets inundated by overbank flooding from that stream or river.
   _____ The overbank flooding occurs at least once every two years.
   NOTE: *The riverine unit can contain depressions that are filled with water when the river is not flooding..*
   NO – go to 6 **YES** – The wetland class is **Riverine**

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time of the year. This means that any outlet, if present is higher than the interior of the wetland.
   NO – go to 7 **YES** – The wetland class is **Depressional**

7. Is the entire wetland located in a very flat area with no obvious depression and no overbank flooding. The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.
   No – go to 8 YES – The wetland class is Depressional

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the class listed in column 2 is less than 10% of the unit, classify the wetland using the class that represents more than 90% of the total area.

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

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

Wetland name or number C

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

Wetland name or number C _

| | | |
|---|---|---|
| **D 4** | **Does the wetland have the <u>opportunity</u> to reduce flooding and erosion?**<br>Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. *Note which of the following indicators of opportunity apply.*<br>____ Wetland is in a headwater of a river or stream that has flooding problems.<br>____ Wetland drains to a river or stream that has flooding problems<br>____ Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems<br>____ Other _____<br>**YES** multiplier is 2 **NO** multiplier is 1 | *(see p. 49)*<br><br>Multiplier<br>_____ |
| ◆ | **<u>TOTAL</u> – Hydrologic Functions** Multiply the score from D3 by D4; then ***add score to table on p. 1*** | |

**Comments:**

Wetland name or number C

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

**Comments:**

Wetland name or number C

| L | Lake-fringe Wetlands | Points |
|---|---|---|
| | WATER QUALITY FUNCTIONS – Indicators that the wetland unit functions to improve water quality. | (only 1 score per box) |
| **L 1** | **Does the wetland unit have the <u>potential</u> to improve water quality?** *(see p.59)* | |
| | L 1.1 Average width of vegetation along the lakeshore (use polygons of Cowardin classes):<br>• Vegetation is more than 33 ft. (10m) wide ..... points = 6<br>• Vegetation is more than 16 ft.(5m) wide and < 33 ft ..... points = 3<br>• Vegetation is more than 6 ft. (2m) wide and < 16 ft ..... points = 1<br>• Vegetation is less than 6 ft. wide..... points = 0<br>**Map of Cowardin classes with widths marked** | **Figure ___** |
| | L 1.2 Characteristics of the vegetation in the wetland: *Choose the appropriate description that results in the highest points, and do not include any open water in your estimate of coverage. The herbaceous plants can be either the dominant form or as an understory in a shrub or forest community. These are not Cowardin classes. Area of Cover is total cover in the unit, but it can be in patches. NOTE: Herbaceous does not include aquatic bed.*<br>• Cover of herbaceous plants is > 90% of the vegetated area..... points = 6<br>• Cover of herbaceous plants is > 2/3 of the vegetated area..... points = 4<br>• Cover of herbaceous plants is > 1/3 of the vegetated area..... points = 3<br>• Other vegetation that is not aquatic bed or herbaceous covers > 2/3 of the unit ..... points = 3<br>• Other vegetation that is not aquatic bed in > 1/3 vegetated area ..... points = 1<br>• Aquatic bed cover and open water > 2/3 of the unit..... points = 0<br>**Map with polygons of different vegetation types** | **Figure ___** |
| | *Add the points in the boxes above* | |
| **L 2** | **Does the wetland have the <u>opportunity</u> to improve water quality?**<br>Answer YES if you know or believe there are pollutants in the lake water, or polluted surface water flowing through the unit to the lake. *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.*<br>____ Wetland is along the shores of a lake or reservoir that does not meet water quality standards<br>____ Grazing in the wetland or within 150 ft<br>____ Polluted water discharges to wetland along upland edge<br>____ Tilled fields or orchards within 150 ft. of wetland<br>____ Residential or urban areas are within 150 ft. of wetland<br>____ Parks with grassy areas that are maintained, ballfields, golf courses (all within 150 ft. of lake shore)<br>____ Power boats with gasoline or diesel engines use the lake<br>____ Other _____<br>**YES** multiplier is 2 **NO** multiplier is 1 | *(see p.61)*<br>Multiplier<br>_____ |
| ◆ | **<u>TOTAL</u> – Water Quality Functions** Multiply the score from L1 by L2; then ***add score to table on p. 1*** | |
| | HYDROLOGIC FUNCTIONS – Indicators that wetland functions to reduce shoreline erosion. | |
| **L 3** | **Does the wetland have the <u>potential</u> to reduce shoreline erosion?** | *(see p.62)* |
| | L 3 Average width and characteristics of vegetation along the lakeshore *(do not include aquatic bed): (choose the highest scoring description that matches conditions in the wetland)*<br>• 3/4 of distance is shrubs or forest at least 33 ft. (10m) wide ..... points = 6<br>• 3/4 of distance is shrubs or forest at least 6 ft. (2m) wide. ..... points = 4<br>• 1/4 of distance is shrubs or forest at least 33 ft. (10m) wide. ..... points = 4<br>• Vegetation is at least 6 ft. (2m) wide (any type except aquatic bed)..... points = 2<br>• Vegetation is less than 6 ft. (2m) wide (any type except aquatic bed) ..... points = 0<br>**Aerial photo or map with Cowardin vegetation classes** | **Figure ___** |
| | *Record the points in the boxes above* | |
| **L 4** | **Does the wetland have the <u>opportunity</u> to reduce erosion?**<br>Are there features along the shore that will be impacted if the shoreline erodes? *Note which of the following conditions apply.*<br>____ There are human structures and activities along the upland edge of the wetland (buildings, fields) that can be damaged by erosion.<br>____ There are undisturbed natural resources along the upland edge of the wetland (e.g. mature forests, other wetlands) that can be damaged by shoreline erosion.<br>____ Other _____<br>**YES** multiplier is 2 **NO** multiplier is 1 | *(see p. 64)*<br>Multiplier<br>_____ |
| ◆ | **<u>TOTAL</u> – Hydrologic Functions** Multiply the score from L3 by L4; then ***add score to table on p. 1*** | |

**Comments:**

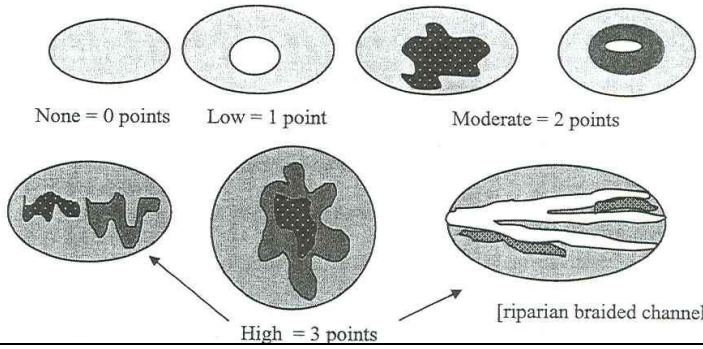
Wetland name or number C

| S | Slope Wetlands | Points |
|---|---|---|
| | WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality. | (only 1 score per box) |
| **S 1** | **Does the wetland have the potential to improve water quality?** | *(see p.64)* |
| | S 1.1 Characteristics of average slope of unit:<br>• Slope is 1% or less *(a 1% slope has a 1 ft. vertical drop in elevation for every 100 ft. horizontal distance)*..... points = 3<br>• Slope is 1% - 2% ..... points = 2<br>• Slope is 2% - 5%. ..... points = 1<br>• Slope is greater than 5% (10 ft rise over 100 ft = 10%) ..... points = 0 | 0 |
| | S 1.2 The soil 2 inches below the surface (or duff layer) is clay, organic *(Use NRCS definitions).*<br>**YES** = 3 points **NO** = 0 points | 0 |
| | S 1.3 Characteristics of the vegetation in the wetland that trap sediments and pollutants: *Choose the points appropriate for the description that best fits the vegetation in the wetland. Dense vegetation means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 inches.*<br>• Dense, uncut, herbaceous vegetation > 90% of the wetland area ..... points = 6<br>• Dense, uncut, herbaceous vegetation > 1/2 of area ..... points = 3<br>• Dense, woody, vegetation > 1/2 of area..... points = 2<br>• Dense, uncut, herbaceous vegetation > 1/4 of area ..... points = 1<br>• Does not meet any of the criteria above for vegetation ..... points = 0<br>**Aerial photo or map with vegetation polygons** | **Figure** ___<br>**1** |
| | **Total for S 1** *Add the points in the boxes above* | 1 |
| **S 2** | **Does the wetland have the opportunity to improve water quality?**<br>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.*<br>___ Grazing in the wetland or within 150 ft<br>___ Untreated stormwater discharges to wetland<br>___ Tilled fields, logging, or orchards within 150 ft. of wetland<br>_x_ Residential, urban areas, or golf courses are within 150 ft. upslope of wetland<br>___ Other _____<br>**YES** multiplier is 2 **NO** multiplier is 1 | *(see p. 67)*<br>Multiplier<br>2 |
| ◆ | **TOTAL – Water Quality Functions** Multiply the score from S1 by S2; then ***add score to table on p. 1*** | 2 |
| | HYDROLOGIC FUNCTIONS – Indicators that wetland functions to reduce flooding and stream erosion. | |
| **S 3** | **Does the wetland have the potential to reduce flooding and stream erosion?** | *(see p.68)* |
| | S 3.1 Characteristics of vegetation that reduce the velocity of surface flows during storms: *Choose the points appropriate for the description that best fits conditions in the wetland (stems of plants should be thick enough (usually > 1/8in), or dense enough to remain erect during surface flows).*<br>• Dense, uncut, **rigid** vegetation covers > 90% of the area of the wetland ..... points = 6<br>• Dense, uncut, **rigid** vegetation> 1/2 area of wetland ..... points = 3<br>• Dense, uncut, **rigid** vegetation > 1/4 area..... points = 1<br>• More than 1/4 of area is grazed, mowed, tilled, or vegetation is not rigid ..... points = 0 | 1 |
| | S 3.2 Characteristics of slope wetland that holds back small amounts of flood flows.<br>The slope has small surface depressions that can retain water over at least 10% of its area.<br>**YES** = 2 points **NO** = 0 points | 2 |
| | Add the points in the boxes above | 3 |
| **S 4** | **Does the wetland have the opportunity to reduce flooding and erosion?**<br>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.*<br>___ Wetland has surface runoff that drains to a river or stream that has flooding problems<br>___ Other _____<br>*(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)*<br>**YES** multiplier is 2 **NO** multiplier is 1 | *(see p. 70)*<br>Multiplier<br>1 |
| ◆ | **TOTAL – Hydrologic Functions** Multiply the score from S3 by S4; then ***add score to table on p. 1*** | 3 |

**Comments:**

Rationale for S4: water drains to a constructed ditch then approximately 100 feet to Bradley Lake that has an outlet control structure and the lake serves as a flood control structure.

Wetland name or number C

| *These questions apply to wetlands of all HGM classes.* | | **Points** |
|---|---|---|
| | HABITAT FUNCTIONS – Indicators that wetland functions to provide important habitat. | (only 1 score per box) |
| **H 1** | **Does the wetland have the <u>potential</u> to provide habitat for many species?** | |
| | H 1.1 <u>Vegetation structure</u> *(see P. 72)*:<br>*Check the types of vegetation classes present (as defined by Cowardin) – Size threshold for each class is 1/4 acre or more than 10% of the area if unit is smaller than 2.5 acres.*<br>___ Aquatic Bed<br>___ Emergent plants<br>__X__ Scrub/shrub (areas where shrubs have > 30% cover)<br>___ Forested (areas where trees have > 30% cover)<br>*If the unit has a forested class check if:*<br>___ 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.<br>*Add the number of vegetation types that qualify. If you have:* **Map of Cowardin vegetation classes**<br>4 structures or more ..... points = 4 — 3 structures ..... points = 2<br>2 structures ..... points = 1 — **1 structure ..... points = 0** | **Figure ___**<br><br>**0** |
| | H 1.2 <u>Hydroperiods</u> *(see p.73)*:<br>*Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or 1/4 acre to count (see text for descriptions of hydroperiods).*<br>___ Permanently flooded or inundated — 4 or more types present points = 3<br>___ Seasonally flooded or inundated — 3 or more types present ..... points = 2<br>___ Occasionally flooded or inundated — 2 types present ..... points = 1<br>__X__ Saturated only — 1 type present ..... points = 0<br>___ Permanently flowing stream or river in, or adjacent to, the wetland<br>__X__ Seasonally flowing stream in, or adjacent to, the wetland<br>___ **Lake-fringe wetland ..... = 2 points**<br>___ **Freshwater tidal wetland ..... = 2 points** **Map of hydroperiods** | **Figure ___**<br><br>1 |
| | H 1.3 <u>Richness of Plant Species</u> *(see p. 75)*:<br>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)*<br>*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<br>5 – 19 species ..... points = 1<br>< 5 species ..... points = 0<br>List species below if you want to:<br>_____<br>_____<br>_____<br>_____ | 1 |
| | H 1.4 Interspersion of Habitats *(see p. 76)*:<br>Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.<br>  <br><br>Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always "high".<br>**Use map of Cowardin classes.** | **Figure ___**<br><br>0 |
| | H 1.5 <u>Special Habitat Features</u> *(see p. 77)*:<br>*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.*<br>__X__ Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft. long)<br>___ Standing snags (diameter at the bottom > 4 inches) in the wetland<br>___ 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)<br>___ Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)*<br>___ At least 1/4 acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)*<br>__X__ Invasive plants cover less than 25% of the wetland area in each stratum of plants<br>*NOTE: The 20% stated in early printings of the manual on page 78 is an error.* | 2 |
| | **H 1 TOTAL Score** – potential for providing habitat *Add the points in the column above* | 4 |

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

**Comments:**

H 2.3 Near or adjacent to other priority habitats listed by WDFW (see p. 82): *(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 330 ft. (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.
__X_ **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%; 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.
__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)

3

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

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

5

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

**Comments:**

Wetland name or number C

## CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

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

| | | |
|---|---|---|
| | **Wetland Type** – *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.* | |
| **SC1** | **Estuarine wetlands?** *(see p.86)*<br>Does the wetland unit meet the following criteria for Estuarine wetlands?<br>____ The dominant water regime is tidal,<br>____ Vegetated, and<br>____ With a salinity greater than 0.5 ppt.<br>**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. 1** |
| | SC 1.2 Is the wetland at least 1 acre in size and meets at least two of the following conditions?<br>**YES** = Category I **NO** = Category II<br>____ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp,. are only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category 1. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre.<br>____ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland<br>____ The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. | **Cat. I**<br>**Cat. II**<br>**Dual Rating I/II** |
| **SC2** | **Natural Heritage Wetlands** *(see p. 87)*<br>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.<br>SC 2.1 Is the wetland being rated in a Section/Township/Range that contains a natural heritage wetland? *(This question is used to screen out most sites before you need to contact WNHP/DNR.)*<br>S/T/R information from Appendix D X or accessed from WNHP/DNR web site _____<br>**YES** _____ Contact WNHP/DNR (see p. 79) and go to SC 2.2 **NO** X<br>SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as a site with state threatened or endangered plant species?<br>**YES** = Category 1 **NO** _____ not a Heritage Wetland | **Cat I** |
| **SC3** | **Bogs** *(see p. 87)*<br>Does the wetland **(or any part of the unit)** meet both the criteria for soils and vegetation in bogs? Use the key below to identify if the wetland is a bog. ***If you answer yes you will still need to rate the wetland based on its function.***<br>1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of soil profile? (See Appendix B for a field key to identify organic soils)? **YES** = go to question 3 **NO** = go to question 2<br>2. Does the wetland have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? **YES** = go to question 3 **NO** = is not a bog for purpose of rating<br>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)?<br>**YES** = Is a bog for purpose of rating **NO** = go to question 4<br>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.<br>4. Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine. WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cover*)?<br>**YES** = Category I **NO** = Is not a bog for purpose of rating | **Cat. I** |

Wetland name or number C

| | | |
|---|---|---|
| **SC4** | **Forested Wetlands** *(see p. 90)*<br>Does the wetland have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? *If you answer yes you will still need to rate the wetland based on its function.*<br>____ **Old-growth forests**: (west of Cascade Crest) Stands of at least two three species forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm or more).<br>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.<br>____ **Mature forests**: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have an average diameters (dbh) exceeding 21 inches (53 cm); crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth.<br>**YES** = Category I **NO** = __X__ not a forested wetland with special characteristics | **Cat. I** |
| **SC5** | **Wetlands in Coastal Lagoons** *(see p. 91)*<br>Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?<br>____ 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.<br>____ 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.)*<br>**YES** = Go to SC 5.1 **NO** = __X__ not a wetland in a coastal lagoon<br>SC 5.1 Does the wetland meet all of the following three conditions?<br>____ 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).<br>____ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland.<br>____ The wetland is larger than 1/10 acre (4350 square ft.)<br>**YES** = Category I **NO** = Category II | **Cat. I**<br><br>**Cat. II** |
| **SC6** | **Interdunal Wetlands** *(see p. 93)*<br>Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)?<br>**YES** = Go to SC 6.1 **NO** = __X__ not an interdunal wetland for rating<br>***If you answer yes you will still need to rate the wetland based on its functions.***<br>In practical terms that means the following geographic areas:<br>• Long Beach Peninsula -- lands west of SR 103<br>• Grayland-Westport -- lands west of SR 105<br>• Ocean Shores-Copalis – lands west of SR 115 and SR 109<br>SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is one acre or larger?<br>**YES** = Category II **NO** = go to SC 6.2<br>SC 6.2 Is the wetland between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre?<br>**YES** = Category III | **Cat. II**<br><br>**Cat. III** |
| ◆ | **Category of wetland based on Special Characteristics**<br>*Choose the "highest" rating if wetland falls into several categories, and record on p. 1.*<br>If you answered **NO** for all types enter "Not Applicable" on p. 1 | **NA** |

**Comments:**

Wetland name or number D

# 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): D Date of site visit: 12/06/2013

Rated by: Jim Carsner Trained by Ecology? Yes X No Date of training: 5/2007

SEC: 3 TWNSHP: 19N RNGE: 4E Is S/T/R in Appendix D? Yes No X

**Map of wetland unit: Figure 1 Estimated size 0.01 acre - onsite**

## SUMMARY OF RATING

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

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

| | |
|---|---|
| Score for Water Quality Functions | 4 |
| Score for Hydrologic Functions | 5 |
| Score for Habitat Functions | 18 |
| TOTAL Score for Functions | 27 |

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

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

**Summary of basic information about the wetland unit.**

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

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

| Check List for Wetlands that Need Additional Protection (in addition to the protection recommended for its category) | YES | NO |
|---|---|---|
| SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered **animal or plant** species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database. | | 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 1 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 in to those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Wetland name or number D

## Classification of Vegetated Wetlands for Western Washington

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

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

2. The entire wetland unit is flat and precipitation is only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.
   NO – go to 3 **YES** – The wetland class is **Flats**
   If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

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

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

5. Does the entire wetland meet all of the following criteria?
   _____ The unit is in a valley or stream channel where it gets inundated by overbank flooding from that stream or river.
   _____ The overbank flooding occurs at least once every two years.
   NOTE: *The riverine unit can contain depressions that are filled with water when the river is not flooding..*
   NO – go to 6 **YES** – The wetland class is **Riverine**

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time of the year. This means that any outlet, if present is higher than the interior of the wetland.
   NO – go to 7 **YES** – The wetland class is **Depressional**

7. Is the entire wetland located in a very flat area with no obvious depression and no overbank flooding. The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.
   No – go to 8 YES – The wetland class is Depressional

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the class listed in column 2 is less than 10% of the unit, classify the wetland using the class that represents more than 90% of the total area.

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

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

Wetland name or number D

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

Wetland name or number D

| | | |
|---|---|---|
| **D 4** | **Does the wetland have the <u>opportunity</u> to reduce flooding and erosion?**<br>Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. *Note which of the following indicators of opportunity apply.*<br>____ Wetland is in a headwater of a river or stream that has flooding problems.<br>____ Wetland drains to a river or stream that has flooding problems<br>____ Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems<br>____ Other _____<br>**YES** multiplier is 2 **NO** multiplier is 1 | *(see p. 49)*<br><br>Multiplier<br>_____ |
| ◆ | **<u>TOTAL</u> – Hydrologic Functions** Multiply the score from D3 by D4; then ***add score to table on p. 1*** | |

**Comments:**

Wetland name or number D

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

**Comments:**

Wetland name or number D

| L | Lake-fringe Wetlands | Points |
|---|---|---|
| | WATER QUALITY FUNCTIONS – Indicators that the wetland unit functions to improve water quality. | (only 1 score per box) |
| **L 1** | **Does the wetland unit have the <u>potential</u> to improve water quality?** *(see p.59)* | |
| | L 1.1 Average width of vegetation along the lakeshore (use polygons of Cowardin classes):<br>• Vegetation is more than 33 ft. (10m) wide ..... points = 6<br>• Vegetation is more than 16 ft.(5m) wide and < 33 ft ..... points = 3<br>• Vegetation is more than 6 ft. (2m) wide and < 16 ft ..... points = 1<br>• Vegetation is less than 6 ft. wide..... points = 0<br>**Map of Cowardin classes with widths marked** | **Figure ___** |
| | L 1.2 Characteristics of the vegetation in the wetland: *Choose the appropriate description that results in the highest points, and do not include any open water in your estimate of coverage. The herbaceous plants can be either the dominant form or as an understory in a shrub or forest community. These are not Cowardin classes. Area of Cover is total cover in the unit, but it can be in patches. NOTE: Herbaceous does not include aquatic bed.*<br>• Cover of herbaceous plants is > 90% of the vegetated area..... points = 6<br>• Cover of herbaceous plants is > 2/3 of the vegetated area..... points = 4<br>• Cover of herbaceous plants is > 1/3 of the vegetated area..... points = 3<br>• Other vegetation that is not aquatic bed or herbaceous covers > 2/3 of the unit ..... points = 3<br>• Other vegetation that is not aquatic bed in > 1/3 vegetated area ..... points = 1<br>• Aquatic bed cover and open water > 2/3 of the unit..... points = 0<br>**Map with polygons of different vegetation types** | **Figure ___** |
| | *Add the points in the boxes above* | |
| **L 2** | **Does the wetland have the <u>opportunity</u> to improve water quality?**<br>Answer YES if you know or believe there are pollutants in the lake water, or polluted surface water flowing through the unit to the lake. *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.*<br>____ Wetland is along the shores of a lake or reservoir that does not meet water quality standards<br>____ Grazing in the wetland or within 150 ft<br>____ Polluted water discharges to wetland along upland edge<br>____ Tilled fields or orchards within 150 ft. of wetland<br>____ Residential or urban areas are within 150 ft. of wetland<br>____ Parks with grassy areas that are maintained, ballfields, golf courses (all within 150 ft. of lake shore)<br>____ Power boats with gasoline or diesel engines use the lake<br>____ Other _____<br>**YES** multiplier is 2 **NO** multiplier is 1 | *(see p.61)*<br>Multiplier<br>_____ |
| ◆ | **<u>TOTAL</u> – Water Quality Functions** Multiply the score from L1 by L2; then ***add score to table on p. 1*** | |
| | HYDROLOGIC FUNCTIONS – Indicators that wetland functions to reduce shoreline erosion. | |
| **L 3** | **Does the wetland have the <u>potential</u> to reduce shoreline erosion?** | *(see p.62)* |
| | L 3 Average width and characteristics of vegetation along the lakeshore *(do not include aquatic bed): (choose the highest scoring description that matches conditions in the wetland)*<br>• 3/4 of distance is shrubs or forest at least 33 ft. (10m) wide ..... points = 6<br>• 3/4 of distance is shrubs or forest at least 6 ft. (2m) wide. ..... points = 4<br>• 1/4 of distance is shrubs or forest at least 33 ft. (10m) wide. ..... points = 4<br>• Vegetation is at least 6 ft. (2m) wide (any type except aquatic bed)..... points = 2<br>• Vegetation is less than 6 ft. (2m) wide (any type except aquatic bed) ..... points = 0<br>**Aerial photo or map with Cowardin vegetation classes** | **Figure ___** |
| | *Record the points in the boxes above* | |
| **L 4** | **Does the wetland have the <u>opportunity</u> to reduce erosion?**<br>Are there features along the shore that will be impacted if the shoreline erodes? *Note which of the following conditions apply.*<br>____ There are human structures and activities along the upland edge of the wetland (buildings, fields) that can be damaged by erosion.<br>____ There are undisturbed natural resources along the upland edge of the wetland (e.g. mature forests, other wetlands) that can be damaged by shoreline erosion.<br>____ Other _____<br>**YES** multiplier is 2 **NO** multiplier is 1 | *(see p. 64)*<br>Multiplier<br>_____ |
| ◆ | **<u>TOTAL</u> – Hydrologic Functions** Multiply the score from L3 by L4; then ***add score to table on p. 1*** | |

**Comments:**

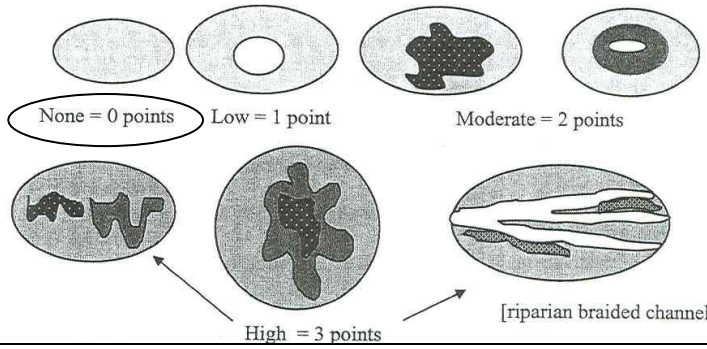
Wetland name or number D

| S | Slope Wetlands | Points |
|---|---|---|
| | WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality. | (only 1 score per box) |
| **S 1** | **Does the wetland have the potential to improve water quality?** | *(see p.64)* |
| | S 1.1 Characteristics of average slope of unit:<br>• Slope is 1% or less *(a 1% slope has a 1 ft. vertical drop in elevation for every 100 ft. horizontal distance)*..... points = 3<br>• Slope is 1% - 2% ..... points = 2<br>• Slope is 2% - 5%. ..... points = 1<br>• Slope is greater than 5% (7.0% ±)..... points = 0 | 0 |
| | S 1.2 The soil 2 inches below the surface (or duff layer) is clay, organic *(Use NRCS definitions).*<br>**YES** = 3 points **NO** = 0 points Based on soil provided at DP5 and NRCS | 0 |
| | S 1.3 Characteristics of the vegetation in the wetland that trap sediments and pollutants: *Choose the points appropriate for the description that best fits the vegetation in the wetland. Dense vegetation means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 inches.*<br>• Dense, uncut, herbaceous vegetation > 90% of the wetland area..... points = 6<br>• Dense, uncut, herbaceous vegetation > 1/2 of area ..... points = 3<br>• Dense, woody, vegetation > 1/2 of area..... points = 2<br>• Dense, uncut, herbaceous vegetation > 1/4 of area ..... points = 1<br>• Does not meet any of the criteria above for vegetation ..... points = 0<br>**Aerial photo or map with vegetation polygons** | **Figure** ___<br>**2** |
| | **Total for S 1** *Add the points in the boxes above* | 2 |
| **S 2** | **Does the wetland have the opportunity to improve water quality?**<br>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.*<br>___ Grazing in the wetland or within 150 ft<br>___ Untreated stormwater discharges to wetland<br>___ Tilled fields, logging, or orchards within 150 ft. of wetland<br>__X__ Residential, urban areas, or golf courses are within 150 ft. upslope of wetland<br>___ Other _____<br>**YES** multiplier is 2 **NO** multiplier is 1 | *(see p. 67)*<br>Multiplier<br>2 |
| ◆ | **TOTAL – Water Quality Functions** Multiply the score from S1 by S2; then ***add score to table on p. 1*** | 4 |
| | HYDROLOGIC FUNCTIONS – Indicators that wetland functions to reduce flooding and stream erosion. | |
| **S 3** | **Does the wetland have the potential to reduce flooding and stream erosion?** | *(see p.68)* |
| | S 3.1 Characteristics of vegetation that reduce the velocity of surface flows during storms: *Choose the points appropriate for the description that best fits conditions in the wetland (stems of plants should be thick enough (usually > 1/8in), or dense enough to remain erect during surface flows).*<br>• Dense, uncut, **rigid** vegetation covers > 90% of the area of the wetland ..... points = 6<br>• Dense, uncut, **rigid** vegetation> 1/2 area of wetland ..... points = 3<br>• Dense, uncut, **rigid** vegetation > 1/4 area..... points = 1<br>• More than 1/4 of area is grazed, mowed, tilled, or vegetation is not rigid ..... points = 0 | 3 |
| | S 3.2 Characteristics of slope wetland that holds back small amounts of flood flows.<br>The slope has small surface depressions that can retain water over at least 10% of its area.<br>**YES** = 2 points **NO** = 0 points | 2 |
| | Add the points in the boxes above | 5 |
| **S 4** | **Does the wetland have the opportunity to reduce flooding and erosion?**<br>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.*<br>___ Wetland has surface runoff that drains to a river or stream that has flooding problems<br>___ Other _____<br>*(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)*<br>**YES** multiplier is 2 **NO** multiplier is 1 | *(see p. 70)*<br>Multiplier<br>1 |
| ◆ | **TOTAL – Hydrologic Functions** Multiply the score from S3 by S4; then ***add score to table on p. 1*** | 5 |

**Comments:**

S3.1 includes offsite wetland areas. S3.2 is based on field observations. S4: Water drains to a constructed stream channel and flows into Bradley Lake. Bradley Lake has a control structure to maintain water levels within the lake and regulate the outfall, controlling downstream flooding.

Wetland name or number D

| *These questions apply to wetlands of all HGM classes.* | | **Points** (only 1 score per box) |
|---|---|---|
| | HABITAT FUNCTIONS – Indicators that wetland functions to provide important habitat. | |
| **H 1** | **Does the wetland have the <u>potential</u> to provide habitat for many species?** | |
| | H 1.1 <u>Vegetation structure</u> *(see P. 72)*:<br>*Check the types of vegetation classes present (as defined by Cowardin) – Size threshold for each class is 1/4 acre or more than 10% of the area if unit is smaller than 2.5 acres.*<br>____ Aquatic Bed<br>____ Emergent plants<br>____ Scrub/shrub (areas where shrubs have > 30% cover)<br>__X__ Forested (areas where trees have > 30% cover)<br>*If the unit has a forested class check if:*<br>____ 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.<br>*Add the number of vegetation types that qualify. If you have:* **Map of Cowardin vegetation classes**<br>4 structures or more ..... points = 4 — 3 structures ..... points = 2<br>2 structures ..... points = 1 — 1 structure ..... points = 0 | **Figure ___**<br><br>**0** |
| | H 1.2 <u>Hydroperiods</u> *(see p.73)*:<br>*Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or 1/4 acre to count (see text for descriptions of hydroperiods).*<br>____ Permanently flooded or inundated — 4 or more types present points = 3<br>____ Seasonally flooded or inundated — 3 or more types present ..... points = 2<br>____ Occasionally flooded or inundated — 2 types present ..... points = 1<br>__X__ Saturated only — 1 type present ..... points = 0<br>____ Permanently flowing stream or river in, or adjacent to, the wetland<br>____ Seasonally flowing stream in, or adjacent to, the wetland<br>____ **Lake-fringe wetland ..... = 2 points**<br>____ **Freshwater tidal wetland ..... = 2 points** **Map of hydroperiods** | **Figure ___**<br><br>**0** |
| | H 1.3 <u>Richness of Plant Species</u> *(see p. 75)*:<br>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)*<br>*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<br>5 – 19 species ..... points = 1<br>List species below if you want to: < 5 species ..... points = 0<br>_____<br>_____<br>_____<br>_____ | 1 |
| | H 1.4 Interspersion of Habitats *(see p. 76)*:<br>Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.<br>  <br><br>Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always "high".<br>**Use map of Cowardin classes.** | **Figure ___**<br><br>**0** |
| | H 1.5 <u>Special Habitat Features</u> *(see p. 77)*:<br>*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.*<br>__X__ Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft. long)<br>__X__ Standing snags (diameter at the bottom > 4 inches) in the wetland<br>____ 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)<br>____ Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)*<br>____ At least 1/4 acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)*<br>__X__ Invasive plants cover less than 25% of the wetland area in each stratum of plants<br>*NOTE: The 20% stated in early printings of the manual on page 78 is an error.* | 3 |
| | **H 1 TOTAL Score** – potential for providing habitat *Add the points in the column above* | 4 |

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

**Comments:**

| | | |
|---|---|---|
| | H 2.3 Near or adjacent to other priority habitats listed by WDFW (see p. 82): *(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 )*<br>Which of the following priority habitats are within 330 ft. (100m) of the wetland unit?<br>*NOTE: the connections do not have to be relatively undisturbed.*<br>____ **Aspen Stands:** Pure or mixed stands of aspen greater than 0.4 ha (1 acre).<br>____ **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*).<br>____ **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.<br>__X_ **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%; 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.<br>____ **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*).<br>____ **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.<br>____ **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*).<br>____ **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.<br>____ **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).*<br>____ **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.<br>____ **Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft.<br>____ **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.<br>__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.<br>If wetland has **3 or more** priority habitats **= 4 points**<br>If wetland has **2** priority habitats = **3 points**<br>If wetland has **1** priority habitat **= 1 point** No habitats = 0 points<br>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) | 3 |
| | H 2.4 Wetland Landscape: *Choose the **one** description of the landscape around the wetland that best fits (see p. 84)*<br>• There are at least 3 other wetlands within 1/2 mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development .....points = 5<br>• The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within 1/2 mile .....points = 5<br>• There are at least 3 other wetlands within 1/2 mile, BUT the connections between them are disturbed. .....points = 3<br>• The wetland fringe on a lake **with** disturbance and there are 3 other lake-fringe wetlands within 1/2 mile .....points = 3<br>• There is at least 1 wetland within 1/2 mile .....points = 2<br>• There are no wetlands within 1/2 mile.....points = 0 | 5 |
| | **H 2** TOTAL Score – opportunity for providing habitat *Add the scores from H2.1, H2.2, H2.3, H2.4* | 14 |
| | *TOTAL for H 1 from page 8* | 4 |
| ◆ | **Total Score for Habitat Functions** Add the points for H 1 and H 2; then ***record the result on p. 1*** | 18 |

**Comments:**

Wetland name or number D

## CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

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

| | | |
|---|---|---|
| | **Wetland Type** – *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.* | |
| **SC1** | **Estuarine wetlands?** *(see p.86)*<br>Does the wetland unit meet the following criteria for Estuarine wetlands?<br>____ The dominant water regime is tidal,<br>____ Vegetated, and<br>____ With a salinity greater than 0.5 ppt.<br>**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. 1** |
| | SC 1.2 Is the wetland at least 1 acre in size and meets at least two of the following conditions?<br>**YES** = Category I **NO** = Category II<br>____ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp,. are only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category 1. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre.<br>____ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland<br>____ The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. | **Cat. I**<br>**Cat. II**<br>**Dual Rating I/II** |
| **SC2** | **Natural Heritage Wetlands** *(see p. 87)*<br>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.<br>SC 2.1 Is the wetland being rated in a Section/Township/Range that contains a natural heritage wetland? *(This question is used to screen out most sites before you need to contact WNHP/DNR.)*<br>S/T/R information from Appendix D X or accessed from WNHP/DNR web site _____<br>**YES** _____ Contact WNHP/DNR (see p. 79) and go to SC 2.2 **NO** X<br>SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as a site with state threatened or endangered plant species?<br>**YES** = Category 1 **NO** _____ not a Heritage Wetland | **Cat I** |
| **SC3** | **Bogs** *(see p. 87)*<br>Does the wetland **(or any part of the unit)** meet both the criteria for soils and vegetation in bogs? Use the key below to identify if the wetland is a bog. ***If you answer yes you will still need to rate the wetland based on its function.***<br>1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of soil profile? (~~See Appendix B~~ for a field key to identify organic soils)? **YES** = go to question 3 **NO** = go to question 2<br>2. Does the wetland have organic soils, either peats or mucks that ~~are less than 16 inches~~ deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, ~~or that are floating on a lake~~ or pond? **YES** = go to question 3 **NO** = is not a bog for purpose of rating<br>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)?<br>**YES** = Is a bog for purpose of rating **NO** = go to question 4<br>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.<br>4. Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine. WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cover*)?<br>**YES** = Category I **NO** = Is not a bog for purpose of rating | **Cat. I** |

Wetland name or number D

| | | |
|---|---|---|
| **SC4** | **Forested Wetlands** *(see p. 90)*<br>Does the wetland have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? *If you answer yes you will still need to rate the wetland based on its function.*<br>____ **Old-growth forests**: (west of Cascade Crest) Stands of at least two three species forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm or more).<br>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.<br>____ **Mature forests**: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have an average diameters (dbh) exceeding 21 inches (53 cm); crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth.<br>**YES** = Category I **NO** = __X__ not a forested wetland with special characteristics | **Cat. I** |
| **SC5** | **Wetlands in Coastal Lagoons** *(see p. 91)*<br>Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?<br>____ 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.<br>____ 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.)*<br>**YES** = Go to SC 5.1 **NO** = __X__ not a wetland in a coastal lagoon<br>SC 5.1 Does the wetland meet all of the following three conditions?<br>____ 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).<br>____ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland.<br>____ The wetland is larger than 1/10 acre (4350 square ft.)<br>**YES** = Category I **NO** = Category II | **Cat. I**<br>**Cat. II** |
| **SC6** | **Interdunal Wetlands** *(see p. 93)*<br>Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)?<br>**YES** = Go to SC 6.1 **NO** = __X__ not an interdunal wetland for rating<br>***If you answer yes you will still need to rate the wetland based on its functions.***<br>In practical terms that means the following geographic areas:<br>• Long Beach Peninsula -- lands west of SR 103<br>• Grayland-Westport -- lands west of SR 105<br>• Ocean Shores-Copalis – lands west of SR 115 and SR 109<br>SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is one acre or larger?<br>**YES** = Category II **NO** = go to SC 6.2<br>SC 6.2 Is the wetland between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre?<br>**YES** = Category III | **Cat. II**<br>**Cat. III** |
| ◆ | **Category of wetland based on Special Characteristics**<br>*Choose the "highest" rating if wetland falls into several categories, and record on p. 1.*<br>If you answered **NO** for all types enter "Not Applicable" on p. 1 | **NA** |

**Comments:**

# Appendix F — Biologist Qualifications

**James H. Carsner, PWS**

Jim Carsner, a certified Professional Wetland Scientist (#1461) with professional training and extensive experience in planning and design, project coordination, permitting and management, aquatic and wetland ecology, habitat restoration, wetland, stream, and benthic delineations and assessments, stream assessments, and mitigation planning and monitoring since 1979. Jim earned a Bachelor's of Science degree from the University of Washington, College of Fisheries and undertook post-graduate studies in wetland ecology at Portland State University.

Jim has been formally trained in the use of the Washington State Wetland Rating System, Determination of Ordinary High Water Mark, Designing Compensatory Mitigation and Restoration Projects, and Reviewing Wetland Mitigation and Monitoring Plans from the US Army Corps of Engineers and Washington State Department of Ecology. He is also a Pierce County Qualified Wetland Specialist and Fisheries Biologist, and he holds similar qualifications from other jurisdictions.

**Parshuram Acharya**

Parshuram Acharya is a Wetland Specialist with professional training and experience in wetland ecology and natural resource management. Parshuram has experience in wetland delineation, plant ecology and taxonomy, vegetation and forest resource inventories, biological assessments, wetland restoration, and mitigation planning. Parshuram has international experience with wetland management, regulations, and permitting in countries including Canada, the Netherlands, and Nepal. Parshuram earned a Master of Science Degree in Botany from the Tribhuvan University in Nepal with a Certificate in Wetland Science and Management from the University of Washington, Seattle. In addition, he holds additional training in Environmental Technology from the British Columbia Institute of Technology and in Wetlands Identification, Classification, and Management from RIZA/WATC in the Netherlands.

Parshuram has worked as an ecologist for the City of Surrey, British Columbia, where he conducted biological assessments, wetland delineations, habitat restoration projects, wetland mitigation, environmental impact analyses, and other vegetation management activities. Parshuram has also worked as a Botanist and Ecologist in Kathmandu, Nepal and as a Restoration and Native Plant Nursery Technician for the Golden Gate National Recreational Area in San Francisco, California.

**Railin Santiago**

Railin Santiago is a professional Environmental Scientist with background in both freshwater and marine ecology. She has experience in fisheries management, assessing marine, shoreline, stream, and wetland systems, conducting biological evaluations, documentation and coordination of ESA, MSA, and NEPA compliance efforts, NPDES compliance, GIS mapping and analysis, and regulatory coordination and permitting. Railin earned a Bachelor's of Science degree from the Evergreen State College, Olympia and a Master's degree in Marine and Environmental Affairs from the University of Washington, Seattle.

In addition, she has received formal training in the National Environmental Policy Act (NEPA) from the National Marine Fisheries Service (NMFS), Geographic Information Systems (GIS) for

Fisheries and Wildlife Biology Applications through the Northwest Environmental Training Center, Wetland Delineation Indicators and Problem Situations, and various NPDES Phase I and II stormwater monitoring and data analysis and regulatory subjects. For a list of representative projects, please contact her at Soundview Consultants LLC.