I-5 Blakeslee to Grand Mound (TDA 13) Mitigation Site

USACE IP NWS-2008-744-SOD

Southwest Region

2017 MONITORING REPORT

Wetlands Program

Issued March 2018
For additional information about this report or the WSDOT Wetlands Program, please contact:

Doug Littauer, Wetlands Program
WSDOT, Environmental Services Office
P. O. Box 47332, Olympia, WA 98504
Phone: 360-570-2579 E-mail: littaud@wsdot.wa.gov

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I-5 Blakeslee to Grand Mound (TDA 13) Mitigation Site

USACE IP NWS-2008-744-SOD

<table>
<thead>
<tr>
<th>General Site Information</th>
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<tbody>
<tr>
<td>USACE IP Number</td>
</tr>
<tr>
<td>Ecology WQC#</td>
</tr>
<tr>
<td>Mitigation Location</td>
</tr>
<tr>
<td>LLID Number</td>
</tr>
<tr>
<td>Construction Date</td>
</tr>
<tr>
<td>Monitoring Period</td>
</tr>
<tr>
<td>Year of Monitoring</td>
</tr>
<tr>
<td>Area of Project Impact¹</td>
</tr>
<tr>
<td>Type of Mitigation</td>
</tr>
<tr>
<td>Planned Area of Mitigation²</td>
</tr>
</tbody>
</table>

¹ The 5.61 acres of direct wetland impact is sourced from USACE 2009. This impact is mitigated for at the North Fork Newaukum Mitigation Bank with the debit of 6.79 credits.

² The type of mitigation for this site is wetland enhancement and restoration and occurs at three total discharge areas (TDA 11, 12, 13) with a combined acreage of approximately 12 acres (WSDOT 2009).
## Summary of Monitoring Results and Management Activities (2017)

<table>
<thead>
<tr>
<th>Performance Standards (Year 5)</th>
<th>2017 Results(^3)</th>
<th>Management Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wetlands will be delineated at monitoring year 5 to assess the development of estimated</td>
<td>Wetland was delineated on April 11, 2017. See Appendix 3 for delineation report.</td>
<td>WSDOT will install an estimated 8,350 trees and shrubs during the winter of 2018-19.</td>
</tr>
<tr>
<td>wetland conditions and Cowardin vegetation classes developed as part of the final planting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>plan.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The sites will exhibit floodplain functions including seasonal inundation at various stages/depths compared to baseline conditions.</td>
<td>Site is seasonally inundated and provides floodplain functions.</td>
<td></td>
</tr>
<tr>
<td>Cover of native wetland trees and shrubs combined (planted and volunteer) will be at least 35 percent in the combined scrub-shrub and forested communities.</td>
<td>50% cover (CI(^{80%}) = 41-60%)</td>
<td>WSDOT will plant 11 different species during the winter of 2018-19.</td>
</tr>
<tr>
<td>At least 2 species of native trees and 4 species of native shrubs will each provide at least 5 percent relative cover in the forested and scrub-shrub areas.</td>
<td>Two tree species and two shrub species provided at least 5% relative cover.</td>
<td></td>
</tr>
<tr>
<td>Cover of native plant species (planted and volunteer) will be at least 25 percent in the riparian area.</td>
<td>39% cover (CI(^{80%}) = 33-46%)</td>
<td></td>
</tr>
<tr>
<td>At least 2 species of native trees and 4 species of native shrubs will each provide at least 5 percent relative cover in the riparian areas.</td>
<td>Four shrub species provided at least 5% relative cover. No trees met this cover standard.</td>
<td>WSDOT will plant 11 different species during the winter of 2018-19.</td>
</tr>
</tbody>
</table>

\(^3\) Estimated values are presented with their corresponding statistical confidence interval. For example, 50% cover (CI\(^{80\%}\) = 41-60%) means we are 80% confident that the true cover value is between 41 and 60 percent.
Cover of native wetland herbaceous plant species (planted and volunteer) will be at least 60 percent in the emergent communities.

| 68% cover (CI80% = 64-72%) |

At least 5 native herbaceous species will be present in the emergent communities.

| Eleven herbaceous species were captured within the emergent sample. |

Washington State-listed or county-listed Class A weeds, Japanese Knotweed, and Purple Loosestrife observed in any area of the mitigation site must be eradicated. All occurrences shall be immediately reported to the site manager and an eradication program will be initiated within 30 days of the report.

| A small patch of purple loosestrife was observed. This information was immediately relayed to the site manager and restoration crew, which treated the species. |

| Purple loosestrife seed heads were cut and transported off-site. Remaining plant stems were sprayed on August 3. |

Thurston County designated Class B or C weeds will be controlled in any area of the mitigation site.

| No Class B or C weeds were identified for control. |

The cover of non-native blackberry species and reed canarygrass will not exceed 25% in the combined emergent, scrub-shrub, forested or buffer planting areas of the mitigation site.

| Total cover of the species is estimated at less than 5% cover. |

| Non-native treatments occurred three times during the 2017 summer season. |

**Report Introduction**

This report summarizes fifth-year (Year 5) monitoring activities at the 005 Total Discharge Areas (TDA) 13 Mitigation Site. Included are a site description, the performance standards, an explanation of monitoring methods, and an evaluation of site development. Monitoring activities included vegetation surveys and photo-documentation on July 24-26, 2017. Emergent vegetation was sampled on August 16, 2017.
What is the I-5 TDA 13 Mitigation Site?

This Total Discharge Areas (TDA) mitigation site (Figure 1) is one of three enhanced floodplain wetlands. The sites offset increased flow volumes from phase 1 of the four-mile I-5 widening project by improving and restoring floodplain function including increased water quality, hydrologic, and habitat functions. Appendix 1 shows the planting plan (WSDOT 2011). Nearby drain tiles were removed, drainage ditches were filled, and the site was excavated connecting the wetland with an adjacent stream channel. Enhanced habitat functions include diverse hydroperiods, vegetation communities, strata, and habitat types.

![Site Sketch](image)

**Figure 1  Site Sketch**

TDA 13 consists of a riparian buffer sloping down to a scrub-shrub and forested wetland area. An emergent area is connected to an adjacent stream, creating a back water area. Creation of this hydrologic connection increases wildlife habitat, hydrologic, and water quality functions in the floodplain.
What are the performance standards for this site?

Year 5

Performance Standard 1
Wetlands will be delineated at monitoring year 5 to assess the development of estimated wetland conditions and Cowardin vegetation classes developed as part of the final planting plan.

Performance Standard 2
The sites will exhibit floodplain functions including seasonal inundation at various stages/depths compared to baseline conditions.

Performance Standard 3
Cover of native wetland trees and shrubs combined (planted and volunteer) will be at least 35 percent in the combined scrub-shrub and forested communities.

Performance Standard 4
At least 2 species of native trees and 4 species of native shrubs will each provide at least 5 percent relative cover in the forested and scrub-shrub areas.

Performance Standard 5
Cover of native plant species (planted and volunteer) will be at least 25 percent in the riparian area.

Performance Standard 6
At least 2 species of native trees and 4 species of native shrubs will each provide at least 5 percent relative cover in the riparian areas.

Performance Standard 7
Cover of native wetland herbaceous plant species (planted and volunteer) will be at least 60 percent in the emergent communities.

Performance Standard 8
At least 5 native herbaceous species will be present in the emergent communities.
Performance Standard 9
Washington State-listed or county-listed Class A weeds, Japanese Knotweed, and Purple Loosestrife observed in any area of the mitigation site must be eradicated. All occurrences shall be immediately reported to the site manager and an eradication program will be initiated within 30 days of the report.

Performance Standard 10
Thurston County designated Class B or C weeds will be controlled in any area of the mitigation site.

Performance Standard 11
The cover of non-native blackberry species and reed canarygrass will not exceed 25% in the combined emergent, scrub-shrub, forested or buffer planting areas of the mitigation site.
How were the performance standards evaluated?

The tables below document the sampling methodology utilized for all of the vegetation-related performance standards (PS) as required by the mitigation plan. For additional details on the methods see the WSDOT Wetland Mitigation Site Monitoring Methods Paper (WSDOT 2008).

**Placement of Baseline:** Two baselines were placed. The first baseline for the riparian, scrub-shrub, and forested zones was placed north-south along the riparian area. The second baseline was placed east-west in the emergent zone.

Baseline 1: Length: 263 meters Transects: 17
Baseline 2: Length: 124 meters Transects: 24

<table>
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<tr>
<th>Attribute</th>
<th>PS 3 &amp; 4</th>
<th>PS 5 &amp; 6</th>
<th>PS 7 &amp; 8</th>
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<tr>
<td>Target pop. Zone</td>
<td>Cover</td>
<td>Cover</td>
<td>Cover</td>
</tr>
<tr>
<td>Native Woody</td>
<td>Native</td>
<td>Native</td>
<td>Herbaceous</td>
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<tr>
<td>Scrub-shrub and forested</td>
<td>Riparian</td>
<td>Emergent</td>
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</tr>
<tr>
<td>Sample method SU length</td>
<td>Line-Intercept</td>
<td>Line-Intercept</td>
<td>Point-Intercept</td>
</tr>
<tr>
<td>SU width</td>
<td>15 m</td>
<td>15 m</td>
<td>20 m</td>
</tr>
<tr>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Points per SU Total # of SU</td>
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<td>NA</td>
<td>40</td>
</tr>
<tr>
<td>20</td>
<td>17</td>
<td>64</td>
<td></td>
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</table>

Figure 2 Site Sampling Design (2017)
How is the site developing?

The site is developing healthy herbaceous and woody plant communities. The site replaces hydrologic functions that were impacted during the I-5 lane-widening project. The inundated herbaceous vegetation likely removes nutrients and sediment flowing during peak flows. In a landscape context, this connection improves flood attenuation and watershed function. The presence of water in the emergent zone throughout the summer averaged 1-2 feet in depth and is evidence of long hydroperiods with ponding and saturation.

The native vegetation meets all current cover performance standards. Relative cover standards, however, are not being met. In particular, the riparian buffer lacks robust tree species that are on track to meet the 5% minimum cover standard. The forested wetland has a higher density of native woody plants and the Oregon ash (*Fraxinus latifolia*) trees are healthy. Currently, invasive cover is low and is not preventing the establishment of native plant communities.

Topographical and vegetative diversity provide high quality habitat for wildlife species. Extensive beaver chews were observed in the northern emergent area. Garter snakes, chorus frogs, mice, deer and coyote scat, and amphibian egg masses were also observed on site. Hummocks within the emergent zone provide habitat for avian species and other wildlife. The site hosts Cedar Waxwing (*Bombycilla cedrorum*), Belted Kingfisher (*Ceryle alcyon*), Red-tailed Hawk (*Buteo jamaicencis*), Virginia Rail (*Rallus limicola*), Red-winged Blackbird (*Agelaius phoeniceus*), American Goldfinch (*Carduelis tristis*), Willow Flycatcher (*Empidonax traillii*), and Common Yellowthroat (*Geothlypis trichas*).
Results for Performance Standard 1
(Wetlands delineation):

Wetland delineation completed on April 11, 2017 indicates 9.04 acres wetland on this site (Photo 1). See Appendix 3 for delineation report.

Results for Performance Standard 2
(Floodplain functions):

Widespread inundation was observed throughout the emergent and scrub-shrub areas during wetland delineation in April 2017 (Photo 2). Widespread algal mats were noted in the scrub-shrub zone during the July site visit.
Results for Performance Standard 3
(Cover of native wetland trees and shrubs combined [planted and volunteer] will be at least 35 percent in the combined scrub-shrub and forested communities):

Cover of native woody species is 50% cover (CI$_{80\%}$ = 41-60%). The ash forest on the southwest part of the site has high cover, estimated at 90% (Photo 3). The scrub-shrub cover estimate is more variable, with woody plants interspersed with native herbaceous communities such as slough sedge (*Carex obtupta*) (Photo 4).

Results for Performance Standard 4
(At least 2 species of native trees and 4 species of native shrubs will each provide at least 5 percent relative cover in the forested and scrub-shrub areas):

Two tree species, Oregon ash (*Fraxinus latifolia*) and black cottonwood (*Populus balsamifera*) provide 14% and 8% cover, respectively. Sitka willow (*Salix sitchensis*) and redosier dogwood (*Cornus alba*) provide 42% and 22% cover, respectively.
Results for Performance Standard 5
(Cover of native plant species [planted and volunteer] will be at least 25 percent in the riparian area):

Cover of native woody plants was 39 percent (CI$_{80\%}$ = 33-46%) (Photo 5).

Results for Performance Standard 6
(At least 2 species of native trees and 4 species of native shrubs will each provide at least 5 percent relative cover in the riparian areas):

Four shrub species had at least 5% relative cover. These species included snowberry (*Symphoricarpus albus*) at 55%, Sitka willow (*Salix sitchensis*) at 20%, Pacific willow (*Salix laciandra*) at 5%, and redosier dogwood (*Cornus alba*) at 5%. No tree species achieved 5% relative cover.

Results for Performance Standard 7
(Cover of native wetland herbaceous plant species [planted and volunteer] will be at least 60 percent in the emergent communities):

Cover of native facultative wet and wetter species in the emergent zone is estimated at 68 percent (CI$_{80\%}$ = 64-72%). This value exceeds the performance standard target (Photo 6).
Results for Performance Standard 8  
(At least 5 native herbaceous species will be present in the emergent communities):

Eleven native herbaceous species were sampled within the emergent community (Photo 7). Dominant species were common spikerush (*Eleocharus palustris*), water sedge (*Carex aquatilis*), and slough sedge (*Carex obnupta*).  

Results for Performance Standard 9  
(Washington State-listed or county-listed Class A weeds, Japanese Knotweed, and Purple Loosestrife observed in any area of the mitigation site must be eradicated):

A small patch of purple loosestrife (*Lythrum salicaria*) was observed during the July site visit. WSDOT monitoring staff mapped the location and relayed this information to the site manager and restoration crew. Control efforts took place on August 3, 2017.

Results for Performance Standard 10  
(Thurston County designated Class B or C weeds will be controlled in any area of the mitigation site):

No Class B or C weeds were observed on site for control.
Results for Performance Standard 11
(The cover of non-native blackberry species and reed canarygrass will not exceed 25% in the combined emergent, scrub-shrub, forested or buffer planting areas of the mitigation site):

Cover of non-native blackberry species and reed canarygrass is qualitatively estimated at less than three percent. Reed canarygrass was found primarily along the northern and eastern borders of the mitigation site. Small patches of blackberry were scattered primarily throughout the thicker forested areas, but were observed in the riparian and scrub-shrub zones as well.

**What is planned for this site?**
Overall, site development is occurring according to the mitigation plan. Continued weed control activities focusing on the control of purple loosestrife, non-native blackberry species, and reed canarygrass will continue.
Appendix 1 – Planting Plan
(from WSDOT 2011)
Appendix 2 – Photo Points
The photographs below were taken from permanent photo-points on July 24, 2017 and document current site development.

Photo Point 1

Photo Point 2

Photo Point 3

Photo Point 4
Photo Point 5

Photo Point Map

- **Photo point**: 1
- **Emergent**: [symbol]
- **Scrub-shrub**: [symbol]
- **Forest**: [symbol]
- **Riparian buffer**: [symbol]
Appendix 3 - Delineation Report
I-5 TDA Wetland Mitigation Sites
TDA 11, TDA 12, & TDA 13

I-5 Blakeslee to Grand Mound
USACE NWS-2008-744-SOD
ECY WQC Permit number 6701

Lewis County, Washington

Prepared by:
Tatiana Dreisbach
WSDOT Environmental Services Office
Olympia, Washington

January 2018
Introduction

This report was prepared by the Washington State Department of Transportation (WSDOT) to describe the wetland boundary delineations for three wetland mitigation sites: Interstate 5 Total Discharge Areas (TDA) 11, 12, and 13, herein after referred to as 005 TDA 11 etcetera. The combined three mitigation sites together provide partial mitigation for unavoidable wetland impacts resulting from the I-5 Blakeslee to Grand Mound project. Additional wetland impacts for the project are mitigated at the North Fork Newaukum Mitigation Bank. Fieldwork was conducted by WSDOT wetland biologist on April 10 and 11, 2017. The delineations identify 13.58 acres of wetland across the three sites within their respective mitigation site boundaries.

### General Information for 005 TDA Wetland Mitigation Sites 11, 12, & 13

<table>
<thead>
<tr>
<th>General Location:</th>
<th>Just north of the Thurston Co./Lewis Co. line, west side of Interstate 5 (Vicinity map, Figure 1)</th>
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<tbody>
<tr>
<td>USACE NWP Number</td>
<td>NWS-2008-744-SOD</td>
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<tr>
<td>Ecology Permit</td>
<td>6701</td>
</tr>
<tr>
<td>Land Resource Region (LRR)</td>
<td>A</td>
</tr>
<tr>
<td>Major Land Resource Area (MLRA)</td>
<td>2</td>
</tr>
<tr>
<td>Construction Date</td>
<td>2011 - 2012</td>
</tr>
<tr>
<td>Monitoring Period</td>
<td>2013 - 2022</td>
</tr>
<tr>
<td>Year of Monitoring</td>
<td>5 of 10 in 2017</td>
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### Mitigation Requirements and Delineation Results Summary

<table>
<thead>
<tr>
<th>TDA Mitigation Sites</th>
<th>Intended Mitigation Type</th>
<th>Intended Mitigation Area¹ (acres)</th>
<th>2017 Delineation Acreage</th>
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<tbody>
<tr>
<td>11</td>
<td>enhancement/restoration</td>
<td>approx. 12</td>
<td>2.44</td>
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<tr>
<td>12</td>
<td></td>
<td></td>
<td>2.10</td>
</tr>
<tr>
<td>13</td>
<td></td>
<td></td>
<td>9.04</td>
</tr>
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</table>

| Total delineated wetland across all three sites | 13.58 acres |
| Total intended wetland mitigation area across all 3 sites | 12 acres |
| Total permanent wetland impacts for the project | 5.61 acres² |

¹ Intended wetland acreages from the Final Wetland Mitigation Plan, Revised April 2009 (WSDOT 2009).
² The 5.31 acres of permanent impacts are mitigated by the combined three mitigation sites in combination with 6.79 credits debited from the WSDOT North Fork Newaukum Mitigation Bank.
Location

Figure 1. Vicinity Map
Methods

Wetland boundaries within the 005 TDA 11, 12, and 13 Mitigation Sites were delineated using routine methods described in the:

- Corps of Engineers Wetlands Delineation Manual (Environmental Laboratory 1987),
- Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0) (USACE 2010)

Wetland boundaries were delineated based on on-site observations of hydrology, soils, and plant communities, in conjunction with background information.

A Global Positioning System (GPS) Trimble GeoXT mapping grade unit was used to record wetland boundaries and sampling point locations (Figures 2, 3, and 4). Wetland boundary points were recorded at regular intervals and at any change in direction along the boundary.

Wetland Delineation and Study Area

Study Area
Wetlands described in this report were assessed only within the study areas within each of the three wetland mitigation site boundaries. The mitigation site boundaries at 005 TDA 11 and 005 TDA 13 include areas beyond the mitigation area and these areas were excluded from the study area (Figures 2 and 4). At 005 TDA 12 the site boundary is synonymous with the study area (Figure 3).

Wetlands
The 005 TDA 11, 12, and 13 mitigation sites are each depressional wetlands. Each of the three wetlands have a variety of Cowardin classes:

- TDA 11 is a mosaic of palustrine emergent (PEM) and palustrine scrub-shrub (PSS)
- TDA 12 is predominantly PEM and palustrine open water (POW) with a small fringe of PSS on the northeast corner of the wetland
- TDA 13 has PEM, PSS, and a young palustrine forested (PFO) vegetation community

Delineation data were collected at each site, at numerous sampling points and recorded on wetland determination data forms (Appendix A). Paired wetland and upland sample points were used to define the wetland edge. Additional wetland sample points characterize various wetland vegetation communities. Data recorded on wetland determination data forms characterize typical wetland and upland conditions observed on site. Vegetation, soils, and hydrology were examined in many additional sampling locations to determine the wetland boundary.
Precipitation
The Regional Delineation Supplement Version 2.0 (USACE 2010) recommends using methods described in Chapter 19 in *Engineering Field Handbook* (NRCS 2015) to determine if precipitation occurring in the three full months prior to the site visit was normal, drier than normal, or wetter than normal. Actual rainfall is compared to the normal range of the 30-year average. Each of the three sites were delineated in early April 2017. When considering the three prior months as a whole, normal precipitation conditions were present prior to fieldwork, with the two months prior to fieldwork within the normal range and the third prior month drier than normal (Appendix B-1).

Light precipitation was recorded in the ten days preceding the April 2017 fieldwork (Appendix B-2).

Growing Season
The following evidence of the growing season was observed at the time of each of the delineations:

- New vegetative growth was present on some herbaceous plants.
- The leaves on most woody species were partially or fully emerged.
005 TDA 11 Delineation Results

The delineation determined that 2.44 acres of wetland were present within the 005 TDA 11 study area (Figure 2). Delineation data at the 005 TDA 11 Mitigation Site were collected at five sampling points and recorded on wetland determination data forms (Appendix A).

<table>
<thead>
<tr>
<th>Section, Township, Range</th>
<th>S24, T15N, R3W</th>
</tr>
</thead>
<tbody>
<tr>
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<tr>
<td>Total Delineated Wetland Area</td>
<td>2.44 acres</td>
</tr>
<tr>
<td>Wetland Delineation Data Forms</td>
<td>Appendix A; Sampling Points W1-SP1, W1-SP3, W1-SP5</td>
</tr>
<tr>
<td>Upland Delineation Data Forms</td>
<td>Appendix A; Sampling Point W1-SP2, W2-SP4</td>
</tr>
<tr>
<td>Delineators</td>
<td>Tony Bush, Kirsten Andrews</td>
</tr>
<tr>
<td>Delineation Date</td>
<td>April 10, 2017</td>
</tr>
</tbody>
</table>

Vegetation

Trees – none
Shrub – redosier dogwood (*Cornus alba*), hardhack (*Spiraea douglasii*), Sitka willow (*Salix sitchensis*), Nootka rose (*Rosa nutkana*) black cottonwood (*Populus balsamifera*) saplings
Herbs – tufted hairgrass (*Deschampsia caespitosa*) slough sedge (*Carex obnupta*) creeping buttercup (*Ranunculus repens*) American speedwell (*Veronica americana*) water foxtail (*Alopecurus geniculatus*), soft rush (*Juncus effusus*)

Soils

Soils examined to a depth of 18 inches exhibited hydric characteristics. Matrix colors of 2.5Y 4/1, 10YR 3/2, 10YR 4/4, and 7.5YR 4/2 were observed with redoximorphic concentrations and depletions occurring in some soil layers. Indicator Depleted Matrix (F3) met.

Hydrology

Areas of inundation, soils saturated in the upper twelve inches of soil, a high water table within twelve inches of the soil surface, and drift deposits were observed in various locations throughout the wetland. Soil profiles were not observed in inundated areas, but they meet the definition of a hydric soil due to long periods during the growing season with inundation, high water table, or saturation. A high groundwater table, as well as surface flows from the adjacent creek during high water events appear to be the main sources of hydrology.

Rationale for Delineation

All three factors present. Hydrophytic vegetation and wetland hydrology indicators helped inform placement of the wetland boundary. Direct observation of water was helpful in determining the boundary and generally correlated with topography. Wetland vegetation was absent in locations were hydrology indicators were lacking.
GPS Data - TDA 11, 4/10/2017

Figure 2. 2017 Delineation Map.

Washington State
Department of Transportation

January 29, 2018
The delineation determined that 2.10 acres of wetland were present within the 005 TDA 12 study area (Figure 3). Delineation data at the 005 TDA 12 Mitigation Site were collected at three sampling points and recorded on wetland determination data forms (Appendix A).

### 005 TDA 12 Wetland Mitigation – Wetland Delineation Summary

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<tr>
<td>Upland Determination Data Forms</td>
<td>Appendix A; Sampling Point W1-SP2</td>
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<tr>
<td>Delineators</td>
<td>Tony Bush, Kirsten Andrews</td>
</tr>
<tr>
<td>Delineation Date</td>
<td>April 10, 2017</td>
</tr>
</tbody>
</table>

**Vegetation**
- Trees – none
- Shrub – hardhack, Sitka willow, redosier dogwood
- Herbs – slough sedge, soft rush, creeping buttercup, American speedwell, broadleaf cattail (*Typha latifolia*)

**Soils**
Soils examined to a depth of 18 inches exhibited hydric characteristics. Matrix colors of 2.5Y 4/1, 10YR 3/1, and 10YR 4/2 were observed with redoximorphic concentrations and depletions occurring in some soil profiles. Indicator Depleted Matrix (F3) met.

**Hydrology**
Areas of inundation, soils saturated in the upper twelve inches of soil, a high water table within twelve inches of the soil surface, water marks, and algal mats were observed in various locations throughout the wetland. Soil profiles were not observed in inundated areas, but they meet the definition of a hydric soil due to long periods during the growing season with inundation, high water table, or saturation. A high groundwater table, as well as surface flows from the adjacent creek during high water events appear to be the main sources of hydrology.

**Rationale for Delineation**
All three factors present. Hydrophytic vegetation and wetland hydrology indicators helped inform placement of the wetland boundary. Direct observation of water was helpful in determining the boundary and generally correlated with topography. Wetland vegetation was absent in locations were hydrology indicators were lacking.
Figure 3. 2017 Delineation Map.
005 TDA 13 Delineation Results

The delineation determined that 9.04 acres of wetland were present within the 005 TDA 13 study area (Figure 4). Delineation data at the 005 TDA 13 Mitigation Site were collected at three sampling points and recorded on wetland determination data forms (Appendix A).

<table>
<thead>
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<th>005 TDA 13 Wetland Mitigation – Wetland Delineation Summary</th>
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</thead>
<tbody>
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<td><strong>Wetland Determination Data Forms</strong></td>
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<td><strong>Upland Determination Data Forms</strong></td>
</tr>
<tr>
<td><strong>Delineators</strong></td>
</tr>
<tr>
<td><strong>Delineation Date</strong></td>
</tr>
<tr>
<td><strong>Vegetation</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Soils</strong></td>
</tr>
<tr>
<td><strong>Hydrology</strong></td>
</tr>
<tr>
<td><strong>Rationale for Delineation</strong></td>
</tr>
</tbody>
</table>
Figure 4. 2017 Delineation Map.
Limitations

This wetland delineation report documents the investigation, best professional judgment and conclusions of WSDOT based on the site conditions encountered at the time of this study. The wetland delineation was performed in compliance with accepted standards for professional wetland biologists and applicable federal, state, and local ordinances. It is correct and complete to the best of our knowledge. It should be considered a Preliminary Jurisdictional Determination of wetlands and other waters until it has been reviewed and approved in writing by the appropriate jurisdictional authorities.
References


Appendix A —Wetland Determination Data Form

Wetland polygons and sampling point locations shown in Figures 2 through 4.

Wetland Delineation Data Form List

TDA 11:
W1-SP1
W1-SP2
W1-SP3
W1-SP4
W1-SP5

TDA 12:
W1-SP1
W1-SP2
W1-SP3

TDA 13:
W1-SP1
W1-SP2
W1-SP3
### Project/Site: 005 TDA 11
City/County: n/a / Thurston
Sampling Date: 4/10/2017

**Applicant/Owner:** WSDOT  
State: WA  
Sampling Point: W1-SP1

**Investigator(s):** Tony Bush, Kristen Andrews  
Section, Township, Range: S24, T15N, R3W

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

**Subregion (LRR):** A  
Lat: 46.768  
Long: -123  
Datum: NAD83HARN

**Soil Map Unit Name:** Indianola loamy sand, 0 to 3 percent slopes  
**NWI Classification:** PEM

**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?**  
- [ ] Yes  
- [ ] No  
Are "Normal Circumstances" present?  
- [ ] Yes  
- [ ] No  
(If needed, explain any answers in Remarks.)

**Are Vegetation, Soil, or Hydrology naturally problematic?**  
- [ ] Yes  
- [ ] No  
(If needed, explain any answers in Remarks.)

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

**Hydric Soil Present?**  
- [ ] Yes  
- [ ] No

**Wetland Hydrology Present?**  
- [ ] Yes  
- [ ] No

**Is the Sampled Area within a Wetland?**  
- [ ] Yes  
- [ ] No

**Remarks:**

### VEGETATION – Use scientific names of plants.

**Tree Stratum** (Plot size: 15ft x 15ft)

<table>
<thead>
<tr>
<th>Number</th>
<th>Species</th>
<th>Absolute % Cover</th>
<th>Relative % Cover</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>3</td>
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<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Absolute % Cover**

<table>
<thead>
<tr>
<th>Number</th>
<th>Species</th>
<th>Absolute % Cover</th>
<th>Relative % Cover</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Relative % Cover**

<table>
<thead>
<tr>
<th>Number</th>
<th>Species</th>
<th>Absolute % Cover</th>
<th>Relative % Cover</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

**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: 100.0% (A/B)

**Prevalence Index worksheet:**

<table>
<thead>
<tr>
<th>Number</th>
<th>Species</th>
<th>Absolute % Cover</th>
<th>Relative % Cover</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Prevalence Index**

<table>
<thead>
<tr>
<th>Number</th>
<th>Species</th>
<th>Absolute % Cover</th>
<th>Relative % Cover</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Hydrophytic Vegetation Indicators:**

- [ ] 1 - Rapid Test for Hydrophytic Vegetation
- [ ] 2 - Dominance Test is >50%
- [ ] 3 - Prevalence Index is ≤3.0¹
- [ ] 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
- [ ] 5 - Wetland Non-Vascular Plants¹
- [ ] Problematic Hydrophytic Vegetation¹ (Explain)

**Remarks:**
SOIL

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

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Color (moist)</th>
<th>%</th>
<th>Color (moist)</th>
<th>%</th>
<th>Type¹</th>
<th>Loc²</th>
<th>Texture</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-5</td>
<td>10YR</td>
<td>4/4</td>
<td>93</td>
<td>7.5YR</td>
<td>4/6</td>
<td>5</td>
<td>C</td>
<td>M</td>
</tr>
<tr>
<td></td>
<td>10YR</td>
<td>5/2</td>
<td>2</td>
<td>D</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5-18</td>
<td>2.5Y</td>
<td>4/1</td>
<td>85</td>
<td>7.5YR</td>
<td>3/4</td>
<td>5</td>
<td>C</td>
<td>PL</td>
</tr>
<tr>
<td></td>
<td>7.5YR</td>
<td>5/6</td>
<td>10</td>
<td>C</td>
<td>M</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

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

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Histosol (A1)</td>
<td></td>
</tr>
<tr>
<td>Histic Epipedon (A2)</td>
<td></td>
</tr>
<tr>
<td>Black Histic (A3)</td>
<td></td>
</tr>
<tr>
<td>Hydrogen Sulfide (A4)</td>
<td></td>
</tr>
<tr>
<td>Depleted Below Dark Surface (A11)</td>
<td></td>
</tr>
<tr>
<td>Thick Dark Surface (A12)</td>
<td></td>
</tr>
<tr>
<td>Sandy Mucky Mineral (S1)</td>
<td></td>
</tr>
<tr>
<td>Sandy Gleyed Matrix (S4)</td>
<td></td>
</tr>
</tbody>
</table>

Restrictive Layer (if present):

<table>
<thead>
<tr>
<th>Type</th>
<th>Depth (inches):</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Hydric Soil Present?  • Yes  • No

Hydraulic Soil Present:  • Yes  • No

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)

Secondary Indicators (2 or more required)

- Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)
- Salt Stain (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)
- FAC-Neutral Test (D5)
- Raised Ant Mounds (D6) (LRR A)
- Frost-Heave Hummocks (D7)

Field Observations:

- Surface Water Present?  • Yes  • No  Depth (inches): 16
- Water Table Present?  • Yes  • No  Depth (inches): 7
- Saturation Present? (includes capillary fringe)  • Yes  • No  Depth (inches): 9

Wetland Hydrology Present?  • Yes  • No

Remarks:

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

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

Project/Site: 005 TDA 11
Applicant/Owner: WSDOT
Investigator(s): Tony Bush, Kristen Andrews

City/County: n/a / Thurston
State: WA
Sampling Point: W1-SP2

Landform (hillslope, terrace, etc.): Footslope
Local relief (concave, convex, none): concave

Landform (hillslope, terrace, etc.): Footslope
Local relief (concave, convex, none): concave

Slope (%): 5

Subregion (LRR): A
Lat: 46.768
Long: -123
Datum: NAD83HARN

Soil Map Unit Name: Indianola loamy sand, 0 to 3 percent slopes
NWI Classification: upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes
Are Vegetation, Soil, or Hydrology significantly disturbed? No

Are Vegetation, Soil, or Hydrology naturally problematic? No

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

Hydrophytic Vegetation Present? Yes
Hydric Soil Present? Yes
Wetland Hydrology Present? Yes

Is the Sampled Area within a Wetland? Yes

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 15ft x 15ft)

Number of Dominant Species
That Are OBL, FACW, or FAC:

Total Number of Dominant
Species Across All Strata:

Percent of Dominant Species
That Are OBL, FACW, or FAC:

Hydrophytic Vegetation Indicators:

1 - Rapid Test for Hydrophytic Vegetation
2 - Dominance Test is >50%
3 - Prevalence Index is ≤3.0¹
4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
5 - Wetland Non-Vascular Plants¹

Problematic Hydrophytic Vegetation¹ (Explain)

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

Hydrophytic Vegetation Present? Yes

Remarks:

<table>
<thead>
<tr>
<th>Tree Stratum</th>
<th>Absolute % Cover</th>
<th>Dom. Sp.?</th>
<th>Relative % Cover</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
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<tr>
<td>3.</td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

= Total Cover

= Total Cover

<table>
<thead>
<tr>
<th>Herb Stratum (Plot size: 5x5 ft)</th>
<th>Absolute % Cover</th>
<th>Dom. Sp.?</th>
<th>Relative % Cover</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Holcus lanatus</td>
<td>40</td>
<td>Y</td>
<td>66.7</td>
<td>FAC</td>
</tr>
<tr>
<td>2. Ranunculus repens</td>
<td>7</td>
<td>N</td>
<td>11.7</td>
<td>FAC</td>
</tr>
<tr>
<td>3. Deschampsia caespitosa</td>
<td>5</td>
<td>N</td>
<td>8.3</td>
<td>FACW</td>
</tr>
<tr>
<td>4. Epilobium ciliatum</td>
<td>3</td>
<td>N</td>
<td>5.0</td>
<td>FACW</td>
</tr>
<tr>
<td>5. Hypochaeris radicata</td>
<td>5</td>
<td>N</td>
<td>8.3</td>
<td>FACU</td>
</tr>
<tr>
<td>6.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td></td>
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</tr>
<tr>
<td>9.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

= Total Cover

<table>
<thead>
<tr>
<th>Woody Vine Stratum (Plot size: 5ft x 5ft)</th>
<th>Absolute % Cover</th>
<th>Dom. Sp.?</th>
<th>Relative % Cover</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

= Total Cover

% Bare Ground in Herb Stratum 40

Remarks:

Prevalence Index worksheet:

<table>
<thead>
<tr>
<th>Total % Cover of:</th>
<th>Multiply by:</th>
</tr>
</thead>
<tbody>
<tr>
<td>OBL species</td>
<td>0 x 1 = 0</td>
</tr>
<tr>
<td>FACW species</td>
<td>10 x 2 = 20</td>
</tr>
<tr>
<td>FAC species</td>
<td>47 x 3 = 141</td>
</tr>
<tr>
<td>FACU species</td>
<td>55 x 4 = 220</td>
</tr>
<tr>
<td>UPL species</td>
<td>0 x 5 = 0</td>
</tr>
<tr>
<td>Column Totals:</td>
<td>112 (A)</td>
</tr>
</tbody>
</table>

Prevalence Index = B/A = 3.402

Hydrophytic Vegetation Present? Yes

Remarks:

| Remarks: | |
|----------| |
**SOIL**

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

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Matrix</th>
<th>Redox Features</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5-16</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

**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 Clay

**Hydric Soil Present?** Yes No

**Restrictive Layer (if present):**

- Type: ____________
- Depth (inches): ____________

**Remarks:**

**HYDROLOGY**

**Wetland Hydrology Indicators:**

- 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)

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

- 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)
- Neutral Test (D5)
- Frost-Heave Hummocks (D7)

**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)

**Field Observations:**

- Surface Water Present? Yes No
- Water Table Present? Yes No
- Saturation Present? Yes No
- (includes capillary fringe)

**Wetland Hydrology Present?** Yes No

**Remarks:**

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available.
**WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region**

Project/Site: 005 TDA 11  
City/County: n/a / Thurston  
Sampling Date: 4/10/2017

Applicant/Owner: WSDOT  
State: WA  
Sampling Point: W1-SP3

Investigator(s): Tony Bush, Kristen Andrews  
Section, Township, Range: S24, T15N, R3W

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

Subregion (LRR): A  
Lat: 46.769  
Long: -122.999  
Datum: NAD83HARN

Soil Map Unit Name: Indianola loamy sand, 0 to 3 percent slopes  
NWI Classification: PEM

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

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.

<table>
<thead>
<tr>
<th>Hydrophytic Vegetation Present?</th>
<th>☐ Yes ☐ No</th>
<th>Is the Sampled Area within a Wetland?</th>
<th>☐ Yes ☐ No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remarks:</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**VEGETATION** – Use scientific names of plants.

<table>
<thead>
<tr>
<th>Tree Stratum (Plot size: 15ft x 15ft)</th>
<th>Absolute % Cover</th>
<th>Dom. Sp.?</th>
<th>Relative % Cover</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>2.</td>
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<tr>
<td>3.</td>
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<tr>
<td>4.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total Cover:

<table>
<thead>
<tr>
<th>Sapling/Shrub Stratum (Plot size: 15ft x 15ft)</th>
<th>Total Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td></td>
</tr>
</tbody>
</table>

Herb Stratum (Plot size: 5ft x 5ft)

<table>
<thead>
<tr>
<th>Species</th>
<th>Absolute % Cover</th>
<th>Relative % Cover</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Carex obovata</td>
<td>60 Y 65.2</td>
<td>OBL</td>
<td></td>
</tr>
<tr>
<td>2. Juncus effusus</td>
<td>5 N 5.4</td>
<td>FACW</td>
<td></td>
</tr>
<tr>
<td>3. Deschampsia caespitosa</td>
<td>7 N 7.6</td>
<td>FACW</td>
<td></td>
</tr>
<tr>
<td>4. Spiraea douglasii</td>
<td>5 N 5.4</td>
<td>FACW</td>
<td></td>
</tr>
<tr>
<td>5. Salix sitchensis</td>
<td>10 N 10.9</td>
<td>FACW</td>
<td></td>
</tr>
<tr>
<td>6. Rosa nutkana</td>
<td>3 N 3.3</td>
<td>FAC</td>
<td></td>
</tr>
<tr>
<td>7. Populus balsamifera</td>
<td>2 N 2.2</td>
<td>FAC</td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total Cover: 92

Hydrophytic Vegetation Present? ☐ Yes ☐ No

Remarks:

Dominance Test worksheet:

<table>
<thead>
<tr>
<th>Number of Dominant Species That Are OBL, FACW, or FAC:</th>
<th>1</th>
<th>(A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Number of Dominant Species Across All Strata:</td>
<td>1</td>
<td>(B)</td>
</tr>
<tr>
<td>Percent of Dominant Species That Are OBL, FACW, or FAC:</td>
<td>100.0%</td>
<td>(A/B)</td>
</tr>
</tbody>
</table>

Prevalence Index worksheet:

<table>
<thead>
<tr>
<th>Total Cover of:</th>
<th>Multiply by:</th>
</tr>
</thead>
<tbody>
<tr>
<td>OBL species</td>
<td>60 x 1 = 60</td>
</tr>
<tr>
<td>FACW species</td>
<td>27 x 2 = 54</td>
</tr>
<tr>
<td>FAC species</td>
<td>5 x 3 = 15</td>
</tr>
<tr>
<td>FACU species</td>
<td>0 x 4 = 0</td>
</tr>
<tr>
<td>UPL species</td>
<td>0 x 5 = 0</td>
</tr>
<tr>
<td>Column Totals</td>
<td>92</td>
</tr>
</tbody>
</table>

Prevalence Index = B/A = 1.402

Hydrophytic Vegetation Indicators:

☐ 1 - Rapid Test for Hydrophytic Vegetation
☐ 2 - Dominance Test is >50%
☐ 3 - Prevalence Index ≤ 3.0
☐ 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
☐ 5 - Wetland Non-Vascular Plants¹
☐ Problematic Hydrophytic Vegetation¹ (Explain)

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

Hydrophytic Vegetation Present? ☐ Yes ☐ No

Remarks:

% Bare Ground in Herb Stratum 8

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

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Color (moist)</th>
<th>%</th>
<th>Color (moist)</th>
<th>%</th>
<th>Type¹</th>
<th>Loc²</th>
<th>Matrix</th>
<th>Texture</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-7</td>
<td>10YR</td>
<td>3/2</td>
<td>10YR</td>
<td>3/6</td>
<td>3</td>
<td>C</td>
<td>PL</td>
<td>Sandy Clay</td>
<td>concentration is prominent</td>
</tr>
<tr>
<td>7-18</td>
<td>7.5YR</td>
<td>5/2</td>
<td>5YR</td>
<td>4/6</td>
<td>15</td>
<td>C</td>
<td>M</td>
<td>Sandy Clay</td>
<td>concentration is prominent</td>
</tr>
</tbody>
</table>

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

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

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Presence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Histosol (A1)</td>
<td>☐</td>
</tr>
<tr>
<td>Histic Epipedon (A2)</td>
<td>☐</td>
</tr>
<tr>
<td>Black Histic (A3)</td>
<td>☐</td>
</tr>
<tr>
<td>Hydrogen Sulfide (A4)</td>
<td>☐</td>
</tr>
<tr>
<td>Depleted Below Dark Surface (A11)</td>
<td>☒</td>
</tr>
<tr>
<td>Thick Dark Surface (A12)</td>
<td>☐</td>
</tr>
<tr>
<td>Sandy Mucky Mineral (S1)</td>
<td>☐</td>
</tr>
<tr>
<td>Sandy Gleyed Matrix (S4)</td>
<td>☐</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Presence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sandy Redox (S5)</td>
<td>☐</td>
</tr>
<tr>
<td>Stripped Matrix (S6)</td>
<td>☐</td>
</tr>
<tr>
<td>Loamy Mucky Mineral (F1) (except MLRA 1)</td>
<td>☐</td>
</tr>
<tr>
<td>Loamy Gleyed Matrix (F2)</td>
<td>☐</td>
</tr>
<tr>
<td>Depleted Matrix (F3)</td>
<td>☒</td>
</tr>
<tr>
<td>Redox Dark Surface (F6)</td>
<td>☐</td>
</tr>
<tr>
<td>Depleted Dark Surface (F7)</td>
<td>☐</td>
</tr>
<tr>
<td>Redox Depressions (F8)</td>
<td>☐</td>
</tr>
</tbody>
</table>

### Restricted Layer (if present):

- **Type:**
- **Depth (inches):**

### Hydric Soil Present? ☐ Yes ☐ No

Remarks:
upper layer would also meet F6 if there were 5% or more concentrations instead of the 3% observed.

### HYDROLOGY

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

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Presence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface Water (A1)</td>
<td>☐</td>
</tr>
<tr>
<td>High Water Table (A2)</td>
<td>☐</td>
</tr>
<tr>
<td>Saturation (A3)</td>
<td>☐</td>
</tr>
<tr>
<td>Water Marks (B1)</td>
<td>☐</td>
</tr>
<tr>
<td>Sediment Deposits (B2)</td>
<td>☐</td>
</tr>
<tr>
<td>Drift Deposits (B3)</td>
<td>☐</td>
</tr>
<tr>
<td>Algal Mat or Crust (B4)</td>
<td>☐</td>
</tr>
<tr>
<td>Iron Deposits (B5)</td>
<td>☐</td>
</tr>
<tr>
<td>Surface Soil Cracks (B6)</td>
<td>☐</td>
</tr>
<tr>
<td>Inundation Visible on Aerial Imagery (B7)</td>
<td>☐</td>
</tr>
<tr>
<td>Sparsely Vegetated Concave Surface (B8)</td>
<td>☐</td>
</tr>
</tbody>
</table>

| 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) |☐|
| FAC-Neutral Test (D5) |☐|
| Elevated Ant Mounds (D6) (LRR A) |☐|
| Frost-Heave Hummocks (D7) |☐|

#### Secondary Indicators (2 or more required)

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Presence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)</td>
<td>☐</td>
</tr>
<tr>
<td>Drainage Patterns (B10)</td>
<td>☐</td>
</tr>
<tr>
<td>Dry-Season Water Table (C2)</td>
<td>☐</td>
</tr>
<tr>
<td>Saturation Visible on Aerial Imagery (C9)</td>
<td>☐</td>
</tr>
<tr>
<td>Geomorphic Position (D2)</td>
<td>☐</td>
</tr>
<tr>
<td>Shallow Aquitard (D3)</td>
<td>☐</td>
</tr>
<tr>
<td>FAC-Neutral Test (D5)</td>
<td>☒</td>
</tr>
<tr>
<td>Raised Ant Mounds (D6) (LRR A)</td>
<td>☐</td>
</tr>
</tbody>
</table>

#### Field Observations:

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Presence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface Water Present?</td>
<td>☐ Yes ☐ No</td>
</tr>
<tr>
<td>Water Table Present?</td>
<td>☐ Yes ☐ No</td>
</tr>
<tr>
<td>Saturation Present?</td>
<td>☐ Yes ☐ No</td>
</tr>
</tbody>
</table>

Wetland Hydrology Present? ☐ Yes ☐ No

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

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

Project/Site: 005 TDA 11  
Applicant/Owner: WSDOT  
City/County: n/a / Thurston  
State: WA  
Investigator(s): Tony Bush, Kristen Andrews  
Sampling Date: 4/10/2017  
Section, Township, Range: S24, T15N, R3W

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

Subregion (LRR): A  
Lat: 46.769  
Long: -122.999  
Datum: NAD83HARN

Soil Map Unit Name: Indianola loamy sand, 0 to 3 percent slopes  
NWI Classification: upland  
Are climatic / hydrologic conditions on the site typical for this time of year? (Yes/No) Yes  
Are Vegetation, Soil, or Hydrology significantly disturbed? Are "Normal Circumstances" present? (Yes/No) Yes

Are Vegetation, Soil, or Hydrology naturally problematic? (Yes/No) No

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

Hydrophytic Vegetation Present? (Yes/No) Yes

Hydric Soil Present? (Yes/No) Yes

Wetland Hydrology Present? (Yes/No) Yes

Is the Sampled Area within a Wetland? (Yes/No) Yes

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 15ft x 15ft)

<table>
<thead>
<tr>
<th>#</th>
<th>Species</th>
<th>% Cover</th>
<th>Dominant?</th>
<th>Relative % Cover</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Thuja plicata</td>
<td>10</td>
<td>N</td>
<td>14.9</td>
<td>FAC</td>
</tr>
<tr>
<td>2.</td>
<td>Symphoricarpos albus</td>
<td>30</td>
<td>Y</td>
<td>44.8</td>
<td>FACU</td>
</tr>
<tr>
<td>3.</td>
<td>Pseudotsuga menziesii</td>
<td>25</td>
<td>Y</td>
<td>37.3</td>
<td>FACU</td>
</tr>
<tr>
<td>4.</td>
<td>Rubus parviflorus</td>
<td>2</td>
<td>N</td>
<td>3.0</td>
<td>FACU</td>
</tr>
</tbody>
</table>

Total Cover = 67

Sapling/Shrub Stratum (Plot size: 15ft x 15ft)

<table>
<thead>
<tr>
<th>#</th>
<th>Species</th>
<th>% Cover</th>
<th>Dominant?</th>
<th>Relative % Cover</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Ranunculus repens</td>
<td>2</td>
<td>Y</td>
<td>28.6</td>
<td>FAC</td>
</tr>
<tr>
<td>2.</td>
<td>Holcus lanatus</td>
<td>5</td>
<td>Y</td>
<td>71.4</td>
<td>FAC</td>
</tr>
</tbody>
</table>

Total Cover = Total Cover

Herb Stratum (Plot size: 5ft x 5ft)

<table>
<thead>
<tr>
<th>#</th>
<th>Species</th>
<th>% Cover</th>
<th>Dominant?</th>
<th>Relative % Cover</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Ranunculus repens</td>
<td>2</td>
<td>Y</td>
<td>28.6</td>
<td>FAC</td>
</tr>
<tr>
<td>2.</td>
<td>Holcus lanatus</td>
<td>5</td>
<td>Y</td>
<td>71.4</td>
<td>FAC</td>
</tr>
</tbody>
</table>

Total Cover = Total Cover

Woody Vine Stratum (Plot size: 5ft x 5ft)

<table>
<thead>
<tr>
<th>#</th>
<th>Species</th>
<th>% Cover</th>
<th>Dominant?</th>
<th>Relative % Cover</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Holcus lanatus</td>
<td>5</td>
<td>Y</td>
<td>71.4</td>
<td>FAC</td>
</tr>
</tbody>
</table>

Total Cover = Total Cover

Remarks:

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
- 2 - Dominance Test is >50%
- 3 - Prevalence Index is ≤3.0¹
- 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
- 5 - Wetland Non-Vascular Plants¹

Problematic Hydrophytic Vegetation¹ (Explain)

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

Hydrophytic Vegetation Present? (Yes/No) Yes
### Profile Description:
(Describe to the depth needed to document the indicator or confirm the absence of indicators.)

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Color (moist)</th>
<th>%</th>
<th>Color (moist)</th>
<th>%</th>
<th>Type¹</th>
<th>Loc²</th>
<th>Texture</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-7</td>
<td>10YR</td>
<td>3/4</td>
<td>96</td>
<td>10YR</td>
<td>3/6</td>
<td>2</td>
<td>C</td>
<td>M</td>
</tr>
<tr>
<td>7-18</td>
<td>10YR</td>
<td>4/2</td>
<td>70</td>
<td>10YR</td>
<td>5/8</td>
<td>30</td>
<td>C</td>
<td>M</td>
</tr>
</tbody>
</table>

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

### 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 Clay concentration is distinct
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1) (except MLRA 1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Redeposited Dark Surface (F7)
- Redox Depressions (F8)

### Restrictive Layer (if present):

- Type: 
- Depth (inches): 

### Hydric Soil Present?  Yes | No

### Remarks:

### HYDROLOGY

#### Wetland Hydrology Indicators:

- Primary Indicators (minimum of one required; check all that apply)
  - Surface Water (A1)
  - High Water Table (A2)
  - Saturation (A3)
  - Water Marks (B1)
  - Sediment Deposits (B2)
  - Drift Deposits (B3)
  - Algal Mat or Crust (B4)
  - Iron Deposits (B5)
  - Surface Soil Cracks (B6)
  - Inundation Visible on Aerial Imagery (B7)
  - Sparsely Vegetated Concave Surface (B8)
  - Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)
  - Salt Crust (B11)
  - Aquatic Invertebrates (B13)
  - Hydrogen Sulfide Odor (C1)
  - 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
- Water Table Present?  Yes | No
- Saturation Present? (includes capillary fringe)  Yes | No

### Wetland Hydrology Present?  Yes | No

### Remarks:

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: 005 TDA 11                              City/County: n/a / Thurston                              Sampling Date: 4/10/2017
Applicant/Owner: WSDOT                              State: WA                              Sampling Point: W1-SP5
Investigator(s): Tony Bush, Kristen Andrews            Section, Township, Range: S24, T15N, R3W
Landform (hillslope, terrace, etc.): Lowland              Local relief (concave, convex, none): concave              Slope (%): 5
Subregion (LRR): A                             Lat: 46.769                       Long: -122.999                    Datum: NAD83HARN
Soil Map Unit Name: Indianola loamy sand, 0 to 3 percent slopes            NWI Classification: PSS
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) (If needed, explain any answers in Remarks.)
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)
Hydric Soil Present? (☐ Yes □ No)
Wetland Hydrology Present? (☐ Yes □ No)
Is the Sampled Area within a Wetland? (☐ Yes □ No)
Remarks:

VEGETATION – Use scientific names of plants.

<table>
<thead>
<tr>
<th>Tree Stratum (Plot size: 15ft x 15ft)</th>
<th>Absolute % Cover</th>
<th>Dom. Sp.?</th>
<th>Relative % Cover</th>
<th>Indicator Status</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

% Cover = Total Cover

<table>
<thead>
<tr>
<th>Sapling/Shrub Stratum (Plot size: 15ft x 15ft)</th>
<th>Absolute % Cover</th>
<th>Dom. Sp.?</th>
<th>Relative % Cover</th>
<th>Indicator Status</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Comus alba</td>
<td>10</td>
<td>Y</td>
<td>25.0</td>
<td>FACW</td>
<td></td>
</tr>
<tr>
<td>2. Spiraea douglasii</td>
<td>30</td>
<td>Y</td>
<td>75.0</td>
<td>FACW</td>
<td></td>
</tr>
</tbody>
</table>

% Cover = Total Cover

<table>
<thead>
<tr>
<th>Herb Stratum (Plot size: 5ft x 5ft)</th>
<th>Absolute % Cover</th>
<th>Dom. Sp.?</th>
<th>Relative % Cover</th>
<th>Indicator Status</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Carex obnupta</td>
<td>40</td>
<td>Y</td>
<td>93.0</td>
<td>OBL</td>
<td></td>
</tr>
<tr>
<td>2. Juncus balticus</td>
<td>3</td>
<td>N</td>
<td>7.0</td>
<td>FACW</td>
<td></td>
</tr>
</tbody>
</table>

% Cover = Total Cover

<table>
<thead>
<tr>
<th>Woody Vine Stratum (Plot size: 5ft x 5ft)</th>
<th>Absolute % Cover</th>
<th>Dom. Sp.?</th>
<th>Relative % Cover</th>
<th>Indicator Status</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

% Cover = Total Cover

Hydrophytic Vegetation Present? (☐ Yes □ No)

Remarks:

Notes:

- 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: 100.0% (A/B)

- Prevalence Index worksheet:
  - Total % Cover of:
    - OBL species 40 x 1 = 40
    - FACW species 43 x 2 = 86
    - FAC species 0 x 3 = 0
    - FACU species 0 x 4 = 0
    - UPL species 0 x 5 = 0
  - Column Totals: 83 (A) 126 (B)
  - Prevalence Index = B/A = 1.518

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? (☐ Yes □ No)

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

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Matrix</th>
<th>Redox Features</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
</tbody>
</table>

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.)

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Histosol (A1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Histic Epipedon (A2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black Histic (A3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hydrogen Sulfide (A4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depleted Below Dark Surface (A11)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thick Dark Surface (A12)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sandy Mucky Mineral (S1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sandy Gleyed Matrix (S4)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Restrictive Layer (if present):

<table>
<thead>
<tr>
<th>Type:</th>
<th>Depth (inches):</th>
<th>Hydric Soil Present?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Yes</td>
</tr>
</tbody>
</table>

Remarks:
Other; standing water to 7 inches. Soils meet definition of hydric soils due to prolonged inundation during the growing season.

### 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)

**Secondary Indicators (2 or more required)**
- 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)
- 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): 7
- Water Table Present? Yes ☑ No ☐ Depth (inches): 0
- Saturation Present? Yes ☑ No ☐ Depth (inches): 0

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

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

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

Project/Site: 005 TDA 12
Applicant/Owner: WSDOT
City/County: n/a / Thurston
State: WA
Sampling Date: 4/10/2017
Sampling Point: W1-SP1

Investigator(s): Tony Bush, Kristen Andrews
Section, Township, Range: S24, T15N, R3W
Landform (hillslope, terrace, etc.): Foottlope
Local relief (concave, convex, none): concave
Slope (%): 10

Subregion (LRR): A
Lat: 46.7747
Long: -123.0017
Datum: NAD83HARN

Soil Map Unit Name: Scamman silty clay loam, 0 to 5 percent slopes
NWI Classification: PEM

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 (If needed, explain any answers in Remarks.)

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.

<table>
<thead>
<tr>
<th>Hydrophytic Vegetation Present?</th>
<th>☐ Yes ☐ No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydric Soil Present?</td>
<td>☐ Yes ☐ No</td>
</tr>
<tr>
<td>Wetland Hydrology Present?</td>
<td>☐ Yes ☐ No</td>
</tr>
<tr>
<td>Is the Sampled Area within a Wetland?</td>
<td>☐ Yes ☐ No</td>
</tr>
<tr>
<td>Remarks:</td>
<td></td>
</tr>
</tbody>
</table>

Remarks:

VEGETATION – Use scientific names of plants.

<table>
<thead>
<tr>
<th>Tree Stratum (Plot size: 15ft x 15ft)</th>
<th>Absolute % Cover</th>
<th>Dom. Sp.?</th>
<th>Relative % Cover</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>2.</td>
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<tr>
<td>3.</td>
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<tr>
<td>4.</td>
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<tr>
<td>5.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Sapling/Shrub Stratum (Plot size: 15ft x 15ft)</th>
<th></th>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
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<td>2.</td>
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<td>4.</td>
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<td>5.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Herb Stratum (Plot size: 5ft x 5ft)</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Juncus effusus</td>
<td>5 N 5.4</td>
<td>FACW</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Ranunculus repens</td>
<td>3 N 3.3</td>
<td>FAC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Veronica americana</td>
<td>2 N 2.2</td>
<td>OBL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Spiraea douglasii</td>
<td>2 N 2.2</td>
<td>FACW</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Carex obnupta</td>
<td>80 Y 87.0</td>
<td>OBL</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| % Bare Ground in Herb Stratum     | 8              |           |                  |                  |

<table>
<thead>
<tr>
<th>Woody Vine Stratum (Plot size: 5ft x 5ft)</th>
<th></th>
<th></th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hydrophytic Vegetation Indicators:</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ 1 - Rapid Test for Hydrophytic Vegetation</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>☑ 2 - Dominance Test is &gt;50%</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>☑ 3 - Prevalence Index ≤ 3.0¹</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>☐ 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>☐ 5 - Wetland Non-Vascular Plants¹</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>☐ Problematic Hydrophytic Vegetation¹ (Explain)</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

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

| Remarks: |               |           |                  |                  |

| Remarks: |               |           |                  |                  |

| Remarks: |               |           |                  |                  |

| Remarks: |               |           |                  |                  |
SOIL

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

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Matrix</th>
<th>Redox Features</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Color (moist)</td>
<td>%</td>
</tr>
<tr>
<td>0-8</td>
<td>10YR</td>
<td>3/1</td>
</tr>
<tr>
<td></td>
<td>2.5Y</td>
<td>4/1</td>
</tr>
<tr>
<td>8-18</td>
<td>10YR</td>
<td>4/2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

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

- 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)

Indicators for Problematic Hydric Soils³:

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

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

Restrictive Layer (if present):

Type: ____________________________

Depth (inches): ____________________________

Hydric Soil Present?  ○ Yes  ○ No

Remarks:

The top eight inches of the soil pit consisted of 2 different matrix colors.

HYDROLOGY

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)

Secondary Indicators (2 or more required)

- 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)

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

**Project/Site:** 005 TDA 12  
**City/County:** n/a / Thurston  
**Sampling Date:** 4/10/2017  
**Applicant/Owner:** WSDOT  
**State:** WA  
**Sampling Point:** W1-SP2  

**Investigator(s):** Tony Bush, Kristen Andrews  
**Section, Township, Range:** S24, T15N, R3W  
**Landform (hillslope, terrace, etc.):** Hillside  
**Local relief (concave, convex, none):** concave  
**Slope (%):** 30  
**Subregion (LRR):** A  
**Lat:** 46.774  
**Long:** -123.001  
**Datum:** NAD83HARN  

**Soil Map Unit Name:** Scamman silty clay loam, 0 to 5 percent slopes  
**NWI Classification:** upland  

**Are climatic / hydrologic conditions on the site typical for this time of year?** (If no, explain in Remarks.)  
**Are Vegetation, Soil, or Hydrology significantly disturbed? Are “Normal Circumstances” present?** (If needed, explain any answers in Remarks.)  
**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  
- **Hydric Soil Present?** Yes / No  
- **Wetland Hydrology Present?** Yes / No  
- **Is the Sampled Area within a Wetland?** Yes / No

**Remarks:**

### VEGETATION – Use scientific names of plants.

**Tree Stratum** (Plot size: 15ft x 15ft)

<table>
<thead>
<tr>
<th>Dominance Test worksheet:</th>
<th>Prevalence Index worksheet:</th>
<th>Hydrophytic Vegetation Indicators:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Dominant Species That Are OBL, FACW, or FAC:</td>
<td>Total % Cover of: Multiply by:</td>
<td>1 - Rapid Test for Hydrophytic Vegetation</td>
</tr>
<tr>
<td>Total Number of Dominant Species Across All Strata:</td>
<td>OBL species</td>
<td>0 x 1 = 0</td>
</tr>
<tr>
<td>Percent of Dominant Species That Are OBL, FACW, or FAC:</td>
<td>FAC species</td>
<td>0 x 2 = 0</td>
</tr>
<tr>
<td>0.0% (A/B)</td>
<td>FAC species</td>
<td>6 x 3 = 18</td>
</tr>
<tr>
<td></td>
<td>FACU species</td>
<td>50 x 4 = 200</td>
</tr>
<tr>
<td></td>
<td>UPL species</td>
<td>0 x 5 = 0</td>
</tr>
<tr>
<td></td>
<td>Column Totals: 56 (A) 218 (B)</td>
<td>Prevalence Index = B/A = 3.893</td>
</tr>
</tbody>
</table>

**Woody Vine Stratum** (Plot size: 5ft x 5ft)

<table>
<thead>
<tr>
<th>Hydrophytic Vegetation Present?</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>

**Remarks:**

### Tree Stratum

<table>
<thead>
<tr>
<th>Plot size: 15ft x 15ft</th>
<th>Absolute % Cover</th>
<th>Dom. Sp.?</th>
<th>Relative % Cover</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
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<td>3.</td>
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<tr>
<td>4.</td>
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</tr>
<tr>
<td>= Total Cover</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

### Sapling/Shrub Stratum

<table>
<thead>
<tr>
<th>Plot size: 15ft x 15ft</th>
<th>OBL species</th>
<th>FAC species</th>
<th>FACU species</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Symphoricarpos albus</td>
<td>40 Y 71.4 FACU</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Sambucus racemosa</td>
<td>5 N 8.9 FACU</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Thuja plicata</td>
<td>3 N 5.4 FAC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Acer macrophyllum</td>
<td>5 N 8.9 FACU</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Holcus lanatus</td>
<td>3 N 5.4 FAC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>= Total Cover</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Herb Stratum

<table>
<thead>
<tr>
<th>Plot size: 5ft x 5ft</th>
<th>OBL species</th>
<th>FAC species</th>
<th>FACU species</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
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<td>3.</td>
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<td>4.</td>
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<td>6.</td>
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<td>7.</td>
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<td>8.</td>
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<td>9.</td>
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<tr>
<td>10.</td>
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<td></td>
</tr>
<tr>
<td>11.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>= Total Cover</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Woody Vine Stratum

<table>
<thead>
<tr>
<th>Plot size: 5ft x 5ft</th>
<th>OBL species</th>
<th>FAC species</th>
<th>FACU species</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>= Total Cover</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Remarks: | | |
| % Bare Ground in Herb Stratum | 100 | |
SOIL

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

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Color (moist)</th>
<th>%</th>
<th>Color (moist)</th>
<th>%</th>
<th>Type¹</th>
<th>Loc²</th>
<th>Texture</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-18</td>
<td>10YR</td>
<td>60</td>
<td>10YR</td>
<td>7</td>
<td>C</td>
<td>M</td>
<td>Clay</td>
<td>concentration is prominent</td>
</tr>
<tr>
<td>2.5Y</td>
<td>4/2</td>
<td>30</td>
<td>2.5Y</td>
<td>6/3</td>
<td>3</td>
<td>D</td>
<td>M</td>
<td>Clay</td>
</tr>
</tbody>
</table>

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

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

- Histosol (A1)
- Histosol Epipedon (A2)
- Black Histosol (A3)
- Hydrogen Sulfide (A4)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)

Indicators for Problematic Hydric Soils³:

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

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

Restrictive Layer (if present):

Type: ____________________________

Depth (inches): ____________________________

Hydric Soil Present? ☐ Yes ☐ No

Remarks:
This soil profile consisted of two matrix colors

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)

Secondary Indicators (2 or more required)

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

Remarks:

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: 005 TDA 12  
City/County: n/a / Thurston  
Sampling Date: 4/10/2017

Applicant/Owner: WSDOT  
State: WA  
Sampling Point: W1-SP3

Investigator(s): Tony Bush, Kristen Andrews  
Section, Township, Range: S24, T15N, R3W

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

Subregion (LRR): A  
Lat: 46.774  
Long: -122.999  
Datum: NAD83HARN

Soil Map Unit Name: Scamman silty clay loam, 0 to 5 percent slopes  
NWI Classification: PEM

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
(If needed, explain any answers in Remarks.)

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  
Hydric Soil Present?  ☑ Yes      ☐ No  
Wetland Hydrology Present?  ☑ Yes      ☐ No  
Is the Sampled Area within a Wetland?  ☑ Yes      ☐ No

Remarks:

VEGETATION – Use scientific names of plants.

<table>
<thead>
<tr>
<th>Tree Stratum (Plot size: 15ft x 15ft)</th>
<th>Absolute % Cover</th>
<th>Dom. Sp.?</th>
<th>Relative % Cover</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
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</tbody>
</table>

= Total Cover

<table>
<thead>
<tr>
<th>Sapling/Shrub Stratum (Plot size: 15ft x 15ft)</th>
<th>Absolute % Cover</th>
<th>Dom. Sp.?</th>
<th>Relative % Cover</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Cornus alba</td>
<td>25</td>
<td>Y</td>
<td>33.3</td>
<td>FACW</td>
</tr>
<tr>
<td>2. Salix sitchensis</td>
<td>50</td>
<td>Y</td>
<td>66.7</td>
<td>FACW</td>
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<td>3.</td>
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</tbody>
</table>
|                                      = Total Cover

<table>
<thead>
<tr>
<th>Herb Stratum (Plot size: 5ft x 5ft)</th>
<th>Absolute % Cover</th>
<th>Dom. Sp.?</th>
<th>Relative % Cover</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Typha latifolia</td>
<td>50</td>
<td>Y</td>
<td>69.4</td>
<td>OBL</td>
</tr>
<tr>
<td>2. Carex obnupta</td>
<td>20</td>
<td>Y</td>
<td>27.8</td>
<td>OBL</td>
</tr>
<tr>
<td>3. Ranunculus repens</td>
<td>2</td>
<td>N</td>
<td>2.8</td>
<td>FAC</td>
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<td>11.</td>
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</table>

= Total Cover

<table>
<thead>
<tr>
<th>Woody Vine Stratum (Plot size: 20)</th>
<th>Absolute % Cover</th>
<th>Dom. Sp.?</th>
<th>Relative % Cover</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
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</table>

= Total Cover

% Bare Ground in Herb Stratum  28

Hydrophytic Vegetation Indicators:

☐ 1 - Rapid Test for Hydrophytic Vegetation
☑ 2 - Dominance Test is >50%
☑ 3 - Prevalence Index is ≤3.0¹
☐ 4 - Morphological Adaptations² (Provide supporting data in Remarks or on a separate sheet)
☐ 5 - Wetland Non-Vascular Plants¹
☐ Problematic Hydrophytic Vegetation¹ (Explain)

Hydrophytic Vegetation Present?  ☑ Yes      ☐ No

 Remarks:

Hydrophytic Vegetation Indicators:

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

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

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Matrix</th>
<th>Redox Features</th>
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<tbody>
<tr>
<td></td>
<td>Color (moist)</td>
<td>%</td>
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</table>

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

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

- 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)

#### Restrictive Layer (if present):

- Type: __________________________
- Depth (inches): ____________________

#### Hydric Soil Present?  O Yes  O No

Remarks:
Standing water in this location to a depth of 4 inches. Prolonged inundation during the growing season meets the definition of hydric soil.

#### HYDROLOGY

### 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)

### Secondary Indicators (2 or more required)
- 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)

### Field Observations:
- Surface Water Present?  O Yes  O No  Depth (inches): 4
- Water Table Present?  O Yes  O No  Depth (inches): 0
- Saturation Present? (includes capillary fringe)  O Yes  O No  Depth (inches): 0

### Wetland Hydrology Present?  O Yes  O No

Remarks:
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available.
WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: 005 TDA 13
City/County: n/a / Thurston
Sampling Date: 4/11/2017
Applicant/Owner: WSDOT
State: WA
Sampling Point: W1-SP1
Investigator(s): Tatiana Dreisbach, Jennie Husby
Section, Township, Range: S13, T15N, R3W
Landform (hillslope, terrace, etc.): Depression
Local relief (concave, convex, none): concave
Subregion (LRR): A
Lat: 46.781
Long: -123.005
Datum: NAD83HARN
Soil Map Unit Name: Everson clay loam
NWI Classification: PEM

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 (If needed, explain any answers in Remarks.)
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
Hydric Soil Present? ☐ Yes ☐ No
Wetland Hydrology Present? ☐ Yes ☐ No
Is the Sampled Area within a Wetland? ☐ Yes ☐ No

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 20ft x 20ft)
1. ☐
2. ☐
3. ☐
4. ☐
5. ☐

Absolute % Cover
Dom. Sp.? % Cover Indicator Status

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: 100.0% (A/B)

Prevalence Index worksheet:


Hydrophytic Vegetation Indicators:
☐ 1 - Rapid Test for Hydrophytic Vegetation
☐ 2 - Dominance Test is >50% ☐
☐ 3 - Prevalence Index is ≤3.0¹
☐ 4 - Morphological Adaptations² (Provide supporting data in Remarks or on a separate sheet)
☐ 5 - Wetland Non-Vascular Plants¹
☐ Problematic Hydrophytic Vegetation¹ (Explain)

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

Hydrophytic Vegetation Present? ☐ Yes ☐ No

Remarks:
### SOIL

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

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Color (moist)</th>
<th>%</th>
<th>Color (moist)</th>
<th>%</th>
<th>Type¹</th>
<th>Loc²</th>
<th>Texture</th>
<th>Remarks</th>
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¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

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

- 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)
- Redox Depressions (F8)

### Restrictive Layer (if present):

- Type:
- Depth (inches):

### Hydric Soil Present?  ○ Yes  ○ No

**Remarks:**

Soils meet the definition of hydric soil due to prolonged inundation during the growing season. See veg and hydrology indicators. Inundation to 13 inches.

### HYDROLOGY

**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)

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

<table>
<thead>
<tr>
<th>Field Observations:</th>
<th>Wetland Hydrology Present?  ○ Yes  ○ No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface Water Present?  ○ Yes  ○ No  Depth (inches):  13</td>
<td></td>
</tr>
<tr>
<td>Water Table Present?  ○ Yes  ○ No  Depth (inches):  0</td>
<td></td>
</tr>
<tr>
<td>Saturation Present? (includes capillary fringe)  ○ Yes  ○ No  Depth (inches):  0</td>
<td></td>
</tr>
</tbody>
</table>

**Remarks:**

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available.
**WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region**

Project/Site: 005 TDA 13
City/County: n/a / Thurston
Sampling Date: 4/11/2017

Applicant/Owner: WSDOT
State: WA
Sampling Point: W1-SP2

Investigator(s): Tatiana Dreisbach, Jennie Husby
Section, Township, Range: S13, T15N, R3W

Landform (hillslope, terrace, etc.): Depression
Local relief (concave, convex, none): concave
Slope (%): 10

Subregion (LRR): A
Lat: 46.78
Long: -123.005
Datum: NAD83HARN

Soil Map Unit Name: Everson clay loam
NWI Classification: PSS

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
(If needed, explain any answers in Remarks.)

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

<table>
<thead>
<tr>
<th>Hydrophytic Vegetation Present?</th>
<th>☑ Yes ☐ No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydric Soil Present?</td>
<td>☑ Yes ☐ No</td>
</tr>
<tr>
<td>Wetland Hydrology Present?</td>
<td>☑ Yes ☐ No</td>
</tr>
<tr>
<td>Is the Sampled Area within a Wetland?</td>
<td>☑ Yes ☐ No</td>
</tr>
</tbody>
</table>

Remarks:

**VEGETATION** – Use scientific names of plants.

<table>
<thead>
<tr>
<th>Tree Stratum (Plot size: 20ft x 20ft)</th>
<th>Absolute % Cover</th>
<th>Dom. % Cover</th>
<th>Relative % Cover</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
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</table>

<table>
<thead>
<tr>
<th>Sapling/Shrub Stratum (Plot size: 15ft x 15ft)</th>
<th>Absolute % Cover</th>
<th>Dom. % Cover</th>
<th>Relative % Cover</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Salix sitchensis</td>
<td>60</td>
<td>Y</td>
<td>69.0</td>
<td>FACW</td>
</tr>
<tr>
<td>2. Cornus alba</td>
<td>20</td>
<td>Y</td>
<td>23.0</td>
<td>FACW</td>
</tr>
<tr>
<td>3. Rosa nutkana</td>
<td>5</td>
<td>N</td>
<td>5.7</td>
<td>FAC</td>
</tr>
<tr>
<td>4. Malus fusca</td>
<td>2</td>
<td>N</td>
<td>2.3</td>
<td>FACW</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Herb Stratum (Plot size: 5ft x 5ft)</th>
<th>Absolute % Cover</th>
<th>Dom. % Cover</th>
<th>Relative % Cover</th>
<th>Indicator Status</th>
</tr>
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<tbody>
<tr>
<td>1. Carex obovata</td>
<td>20</td>
<td>Y</td>
<td>41.7</td>
<td>OBL</td>
</tr>
<tr>
<td>2. Alopecurus pratensis</td>
<td>20</td>
<td>Y</td>
<td>41.7</td>
<td>FAC</td>
</tr>
<tr>
<td>3. Lotus corniculatus</td>
<td>5</td>
<td>N</td>
<td>10.4</td>
<td>FAC</td>
</tr>
<tr>
<td>4. Juncus effusus</td>
<td>2</td>
<td>N</td>
<td>4.2</td>
<td>FACW</td>
</tr>
<tr>
<td>5. Typha latifolia</td>
<td>1</td>
<td>N</td>
<td>2.1</td>
<td>OBL</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Woody Vine Stratum (Plot size: 5ft x 5ft)</th>
<th>Absolute % Cover</th>
<th>Dom. % Cover</th>
<th>Relative % Cover</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

% Bare Ground in Herb Stratum: 52

Remarks:

**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: 100.0% (A/B)

**Prevalence Index worksheet:**

<table>
<thead>
<tr>
<th>Total % Cover of:</th>
<th>Multiply by:</th>
</tr>
</thead>
<tbody>
<tr>
<td>OBL species</td>
<td>21 x 1 = 21</td>
</tr>
<tr>
<td>FACW species</td>
<td>84 x 2 = 168</td>
</tr>
<tr>
<td>FAC species</td>
<td>30 x 3 = 90</td>
</tr>
<tr>
<td>FACU species</td>
<td>0 x 4 = 0</td>
</tr>
<tr>
<td>UPL species</td>
<td>0 x 5 = 0</td>
</tr>
<tr>
<td>Column Totals</td>
<td>135 (A) 279 (B)</td>
</tr>
</tbody>
</table>

Prevalence Index = B/A = 2.067

**Hydrophytic Vegetation Indicators:**

☐ 1 - Rapid Test for Hydrophytic Vegetation
☐ 2 - Dominance Test is >50%
☐ 3 - Prevalence Index is ≤3.0¹
☐ 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
☐ 5 - Wetland Non-Vascular Plants¹
☐ Problematic Hydrophytic Vegetation¹ (Explain)

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

| Hydrophytic Vegetation Present? | ☑ Yes ☐ No |

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

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Matrix</th>
<th>Color (moist)</th>
<th>%</th>
<th>Redox Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-3</td>
<td></td>
<td>10YR</td>
<td>2/1</td>
<td>100</td>
</tr>
<tr>
<td>3-14</td>
<td></td>
<td>2.5Y</td>
<td>5/2</td>
<td>80</td>
</tr>
</tbody>
</table>

**Remarks:**
- Concentration is prominent
- Concentration is prominent

---

### 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)

**Indicators for Problematic Hydric Soils**:  
- 2 cm Muck (A10)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

**Restrictive Layer (if present):**

- Type: □ C=Concentration, □ D=Depletion, □ RM=Reduced Matrix, □ CS=Covered or Coated Sand Grains.
- Depth (inches): ______________________

**Hydric Soil Present?** □ Yes □ No

**Remarks:**
- Concentration is prominent

---

### 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)

**Secondary Indicators** (2 or more required)

- Water-Stained Leaves (B9) (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)

**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): 9
- Saturation Present? □ Yes □ No
- Depth (inches): 4

**Wetland Hydrology Present?** □ Yes □ No

**Remarks:**
- Shallow inundation present within 5 feet down slope of pit.

---

US Army Corps of Engineers (WSDOT Adapted Form)  
Western Mountains, Valleys, and Coast – Version 2.0
WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: 005 TDA 13
Applicant/Owner: WSDOT
City/County: n/a / Thurston
Investigator(s): Tatiana Dreisbach, Jennie Husby
State: WA
Sampling Date: 4/11/2017
Sampling Point: W1-SP3

Landform (hillslope, terrace, etc.): Depression
Local relief (concave, convex, none): concave

Subregion (LRR): A
Lat: 46.78
Long: -123.005
Datum: NAD83HARN

Soil Map Unit Name: Everson clay loam
NWI Classification: upland

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 (If needed, explain any answers in Remarks.)

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

HYDROPHYTIC VEGETATION PRESENCE – Attach site map showing sampling point locations, transects, important features, etc.

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

 Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 20ft x 20ft)

1. ____________________________
   Absolute % Cover
   Relative % Cover
   Indicator Status

2. ____________________________
3. ____________________________
4. ____________________________

Total Cover = Total Cover

Sapling/Shrub Stratum (Plot size: 15ft x 15ft)

1. Symphoricarpos albus 20 Y 62.5 FACU
2. Corylus cornuta 5 N 15.6 FACU
3. Acer circinatum 2 N 6.3 FAC
4. Populus balsamifera 2 N 6.3 FAC
5. Amelanchier alnifolia 3 N 9.4 FACU

Total % Cover = Total Cover

Herb Stratum (Plot size: 5ft x 5ft)

1. Holcus lanatus 70 Y 92.1 FAC
2. Taraxacum officinale 2 N 2.6 FACU
3. Hypochaeris radicata 2 N 2.6 FACU
4. Ranunculus repens 2 N 2.6 FAC

Total Cover = Total Cover

Woody Vine Stratum (Plot size: 5ft x 5ft)

1. ____________________________
2. ____________________________

Total Cover = Total Cover

% Bare Ground in Herb Stratum 24

Remarks:

Hydrophytic Vegetation Indicators:

1. Rapid Test for Hydrophytic Vegetation
2. Dominance Test is >50%
3. Prevalence Index is ≤3.0¹
4. Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
5. Wetland Non-Vascular Plants¹
   Problematic Hydrophytic Vegetation¹ (Explain)

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

Hydrophytic Vegetation Present? ○ Yes ○ No

Prevalence Index = B/A = 3.296
Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Color (moist)</th>
<th>%</th>
<th>Color (moist)</th>
<th>%</th>
<th>Type¹</th>
<th>Loc²</th>
<th>Texture</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-3</td>
<td>10YR</td>
<td>3/2</td>
<td>90</td>
<td>10YR</td>
<td>4/6</td>
<td>C</td>
<td>M</td>
<td>Loam</td>
</tr>
<tr>
<td>3-5</td>
<td>10YR</td>
<td>2/1</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Loam</td>
</tr>
<tr>
<td>5-16</td>
<td>10YR</td>
<td>4/3</td>
<td>90</td>
<td>7.5YR</td>
<td>4/6</td>
<td>5</td>
<td>C</td>
<td>M</td>
</tr>
</tbody>
</table>

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

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

- 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)

Indicators for Problematic Hydric Soils³:

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

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

Restrictive Layer (if present):

- Type: ____________________________
- Depth (inches): _____________________

Hydric Soil Present?  Yes ☐ No ☐

Remarks:
The top layer would need to be a minimum of 4 inches thick to meet F6 and it is only 3 inches.

HYDROLOGY

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

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- 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 ☐
- Water Table Present?  Yes ☐ No ☐
- Saturation Present?  Yes ☐ No ☐
- (includes capillary fringe)

Wetland Hydrology Present?  Yes ☐ No ☐

Remarks:

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
## Appendix B — Precipitation Data

### Appendix B-1. Comparison of Observed and Normal Precipitation (NRCS 1997)

Monthly precipitation data for Centralia, Washington, for all three delineations occurring in early April 2017.

<table>
<thead>
<tr>
<th>Month</th>
<th>3 yrs. in 10 less than</th>
<th>Average</th>
<th>3 yrs. in 10 more than</th>
<th>Rainfall</th>
<th>Condition dry, wet, normal</th>
<th>Condition Value</th>
<th>Month weight value</th>
<th>Product of previous two columns</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mar</td>
<td>3.80</td>
<td>4.87</td>
<td>5.62</td>
<td>5.09</td>
<td>N</td>
<td>2</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Feb</td>
<td>3.58</td>
<td>5.53</td>
<td>6.65</td>
<td>5.52</td>
<td>N</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Jan</td>
<td>4.05</td>
<td>6.44</td>
<td>7.78</td>
<td>1.67</td>
<td>D</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

\[a\] NRCS 2018a  
\[b\] Conditions are considered normal if they fall within the low and high range around the average.

Note: If sum is

<table>
<thead>
<tr>
<th>Sum</th>
<th>Condition value:</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 - 9</td>
<td>Drier than normal: Dry (D) = 1</td>
</tr>
<tr>
<td>10 - 14</td>
<td>Normal: Normal (N) = 2</td>
</tr>
<tr>
<td>15 - 18</td>
<td>Wetter than normal: Wet (W) = 3</td>
</tr>
</tbody>
</table>

Conclusions: Normal precipitation conditions were present prior to the field visit.
Appendix B-2. Daily Precipitation 10 days preceding fieldwork, Centralia, Washington

For Fieldwork on April 10, 2017

<table>
<thead>
<tr>
<th>Date (2017)</th>
<th>Daily Precipitation (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apr 9</td>
<td>0.01</td>
</tr>
<tr>
<td>Apr 8</td>
<td>0.04</td>
</tr>
<tr>
<td>Apr 7</td>
<td>0.33</td>
</tr>
<tr>
<td>Apr 6</td>
<td>0.08</td>
</tr>
<tr>
<td>Apr 5</td>
<td>0.30</td>
</tr>
<tr>
<td>Apr 4</td>
<td>0.17</td>
</tr>
<tr>
<td>Apr 3</td>
<td>0.00</td>
</tr>
<tr>
<td>Apr 2</td>
<td>0.00</td>
</tr>
<tr>
<td>Apr 1</td>
<td>0.02</td>
</tr>
<tr>
<td>Mar 31</td>
<td>0.00</td>
</tr>
<tr>
<td><strong>Sum</strong></td>
<td><strong>0.95</strong></td>
</tr>
</tbody>
</table>

*a NRCS 2018a

For Fieldwork on April 11, 2017

<table>
<thead>
<tr>
<th>Date (2017)</th>
<th>Daily Precipitation (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apr 10</td>
<td>0.03</td>
</tr>
<tr>
<td>Apr 9</td>
<td>0.01</td>
</tr>
<tr>
<td>Apr 8</td>
<td>0.04</td>
</tr>
<tr>
<td>Apr 7</td>
<td>0.33</td>
</tr>
<tr>
<td>Apr 6</td>
<td>0.08</td>
</tr>
<tr>
<td>Apr 5</td>
<td>0.30</td>
</tr>
<tr>
<td>Apr 4</td>
<td>0.17</td>
</tr>
<tr>
<td>Apr 3</td>
<td>0.00</td>
</tr>
<tr>
<td>Apr 2</td>
<td>0.00</td>
</tr>
<tr>
<td>Apr 1</td>
<td>0.02</td>
</tr>
<tr>
<td><strong>Sum</strong></td>
<td><strong>0.98</strong></td>
</tr>
</tbody>
</table>

*a NRCS 2018a
Literature Cited


