270 Pullman to Idaho State Line (Patterson) Mitigation Site

USACE IP 200500225

Eastern Region

2018 MONITORING REPORT

Wetlands Program

Issued March 2019

Washington State Department of Transportation

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270 Pullman to Idaho State Line (Patterson) Mitigation Site

USACE IP 200500225

<table>
<thead>
<tr>
<th>General Site Information</th>
</tr>
</thead>
<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>Type of Impact</td>
</tr>
</tbody>
</table>
| Area of Project Impact
d| 5.18 acres (USACE)                                          |
| 5.91 acres (Ecology)                                        |
| Type of Mitigation                                          | Wetland Establishment | Wetland Enhancement |
| Area of Mitigation
d| 3.48 acres                                                 |
| 0.12 acre                                                   |

1 Impact acreages were referenced from the USACE permit 200500225 (USACE 2006) and the Water Quality Certification Order #2847 (Ecology 2005).

2 Mitigation acreages were referenced from the Final Mitigation Report for Pullman to Idaho State Line (WSDOT 2005).
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Summary of Monitoring Results and Management Activities (2018)

<table>
<thead>
<tr>
<th>Performance Standards</th>
<th>2018 Results³</th>
<th>Management Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wetland delineation contains no less than 3.48 acres.</td>
<td>See Appendix 3 for full results</td>
<td></td>
</tr>
<tr>
<td>Native woody species will achieve 60% coverage in scrub-shrub (PSS) and forested (PFO) creation areas.</td>
<td>40% cover (CI_{80%} = 32-49%)</td>
<td>Planted 150 stakes, 40 1-gallon containers of native woody species (spring &amp; fall 2018)</td>
</tr>
<tr>
<td>Two native woody plant species will achieve 5% or greater relative cover in the forested and scrub-shrub wetland creation areas.</td>
<td>Achieved (5 species)</td>
<td></td>
</tr>
<tr>
<td>Native woody species will achieve 50% coverage in buffer areas.</td>
<td>74% cover (CI_{80%} = 67-80%)</td>
<td></td>
</tr>
<tr>
<td>Two native woody plant species will achieve 5% or greater relative cover in buffer areas.</td>
<td>Achieved (5 species)</td>
<td></td>
</tr>
<tr>
<td>No more than 30% coverage by the following non-native invasive species on the entire site: reed canarygrass (Phalaris arundinacea), non-native blackberries (Rubus sp.), and Scotch broom (Cytisus scoparius).</td>
<td>35-45% (visual estimate)</td>
<td>4 spraying visits, 8 brush-cutting/hand pulling visits (2018)</td>
</tr>
</tbody>
</table>

Report Introduction

This report summarizes final-year (Year-10) monitoring activities at the State Route (SR) 270 Patterson Mitigation Site. Included are a site description, the performance standards, an explanation of monitoring methods, wetland delineation report, and an evaluation of site success. Monitoring activities included vegetation surveys and photo-documentation on July 24 and 25 and September 11, 2018. The wetland delineation was conducted on April 23-25, 2018.

³ Estimated values are presented with their corresponding statistical confidence interval. For example, 40% cover (CI_{80\%} = 32-49\% cover) means we are 80% confident that the true cover value is between 32% and 49%.
What is the 270 Patterson Mitigation Site?

This 8.33-acres mitigation site (Figure 1) was created as partial compensation for the loss of 5.91 acres of wetlands due the widening of SR 270 from the City of Pullman to the Idaho state line. This project was designed to improve capacity and safety through the widening of the highway from a two-lane roadway to a four-lane facility with a 14-foot wide median left turn lane configuration. The Patterson Mitigation Site was designed to improve wetland and riparian functions such as flood flow alteration, sediment and nutrient/toxicant removal, erosion control, habitat suitability, plant richness, stream shading, and production of woody debris. This mitigation site is one of three mitigation sites created as compensation for this project.

![Site Sketch](image.png)

**Figure 1   Site Sketch**

The SR 270 Patterson Mitigation Site consists of 3.48 acres of newly established scrub-shrub/forested wetland, 0.12 acre of enhanced wetland, and 4.73 acres of enhanced buffer. The site sketch reflects how the site has developed rather than what was intended. In particular, the intended emergent zone has not developed. Appendix 2 contains site directions.
What are the performance standards for this site?

**Year 10**

**Performance Standard 1**
The wetland area will be delineated using methodology set forth in the Washington State Wetlands Identification and Delineation Manual (Ecology, 1997) to assure that the mitigation site contains no less than created wetland acreage listed in the objective above. [3.48 acres]

**Performance Standard 2**
Native woody species will achieve 60% coverage in scrub-shrub (PSS) and forested (PFO) creation areas.

**Performance Standard 3**
Two native woody species will achieve 5% or greater relative cover in the forested and scrub-shrub wetland creation areas.

**Performance Standard 4**
Native woody species will achieve 50% coverage in the buffer areas.

**Performance Standard 5**
Two native woody plant species will achieve 5% or greater relative cover in the buffer areas.

**Performance Standard 6**
No more than 30% coverage by the following non-native invasive species on the entire site: reed canarygrass (*Phalaris arundinacea*), non-native blackberries (*Rubus* sp.), and Scotch broom (*Cytisus scoparius*).
How were the performance standards evaluated?

WSDOT staff performed a wetland delineation using 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) and a Global Positioning System (Trimble Mapping Grade) (Performance Standards 1).

The table below documents the sample method used for the remaining performance standards (PS) as required by the mitigation plan. For additional details on the methods see the [WSDOT Wetland Mitigation Site Monitoring Methods Paper](http://example.com) (WSDOT 2008).

**Placement of Baseline:** The segmented baseline was placed on each side of and parallel to Paradise Creek. The two segments were placed near the southern and northern site edges, respectively.

**Segmented Baseline:** Length 741 m Transects 1-13
Length 707 m Transects 14-25

<table>
<thead>
<tr>
<th>Attribute</th>
<th>PS 2 &amp; 3</th>
<th>PS 4 &amp; 5</th>
<th>PS 6</th>
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<tbody>
<tr>
<td>Target population</td>
<td>Cover</td>
<td>Cover</td>
<td>Cover</td>
</tr>
<tr>
<td>Noxious/invasive species</td>
<td>Native</td>
<td>Native</td>
<td></td>
</tr>
<tr>
<td>Woody species</td>
<td>woody</td>
<td>woody</td>
<td></td>
</tr>
<tr>
<td>Zone</td>
<td>PSS/PFO</td>
<td>Buffer</td>
<td>Entire site</td>
</tr>
<tr>
<td>Sample method</td>
<td>Line</td>
<td>UBT</td>
<td>Visual estimate</td>
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<tr>
<td>SU length</td>
<td>5</td>
<td>5</td>
<td>n/a</td>
</tr>
<tr>
<td>SU width</td>
<td>n/a</td>
<td>1</td>
<td>n/a</td>
</tr>
<tr>
<td>Points per SU</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Total # of SU</td>
<td>21</td>
<td>23</td>
<td>n/a</td>
</tr>
</tbody>
</table>
Is this site a success?

This site is providing many of the intended wetland functions to mitigate for the lane widening on SR 270. Woody cover in the buffer zone is dense and meets its final-year performance standard. Thickets of Wood's rose (*Rosa woodsii*) established on the site edges that border SR 270 to the north and the Bill Chipman Palouse Trail to the south. These brambles screen the wetland from traffic and surrounding human influences.

Native vegetation in the forested and scrub-shrub wetland is below its performance target. Vegetation is patchy with Drummond's willow (*Salix drummondiana*), black cottonwood (*Populus balsamifera*), sandbar willow (*Salix exigua*), and redosier dogwood (*Cornus alba*) prevalent throughout this zone. Extensive herbivory was observed on black cottonwoods. Where established, native vegetation is helping control reed canarygrass monoculture.

Across the site, reed canarygrass is estimated at 40 percent. The emergent strip adjacent to Paradise Creek did not establish and deep incised banks characterize this reach of creek. Reed canarygrass lines its streambanks. While still prevalent, reed canarygrass decreases in the upland buffer areas.

Overall, this mitigation site has improved this 700-meter stretch of Paradise Creek. Native plant communities have improved, providing wildlife habitat and flood flow alteration in this heavily altered landscape. In time, this vegetation may help cool stream temperatures and provide a future source of large woody debris for the stream.
Results for Performance Standard 1
(Wetland delineation):

See Appendix 3 for full delineation report.

Results for Performance Standard 2
(Native woody species will achieve 60 percent coverage in PSS and PFO creation areas):

Cover in the PSS and PFO creation areas was below the target for native woody species at 40 percent ($C_{80\%} = 32\%-49\%$). Native vegetation is patchy, particularly in areas near Paradise Creek (Photo 1). There is no emergent area; rather, dense thickets of reed canarygrass line the creek banks (Photo 2).

Photo 1
Native cover in PSS & PFO (Sept 2018)

Photo 2
Reed canarygrass lining Paradise Creek (Sept 2018)
Results for Performance Standard 3
(Two native woody species will achieve 5% or greater relative cover in the forested and scrub-shrub wetland creation areas):

Five species achieved five percent or greater relative cover (Photo 3). These species include sandbar willow (*Salix exigua*), Drummond’s willow (*Salix drummondiana*), redosier dogwood (*Cornus alba*), black cottonwood (*Populus balsamifera*), and Wood’s rose (*Rosa woodsii*). Black cottonwood and Drummond’s willow achieved the greatest percentage of relative cover.

Results for Performance Standard 4
(Native woody species will achieve 50% coverage in the buffer areas):

Cover in the upland buffer zone is 74 percent (CI$_{80\%} = 67$-80%), meeting its year-10 performance standard. Dense thickets of Wood’s rose have established and choked out reed canarygrass (Photo 4).
Results for Performance Standard 5
(Two native woody plant species will achieve 5% or greater relative cover in the buffer areas):

Wood’s rose, snowberry (*Symphoricarpos albus*), golden current (*Ribes aureum*), cluster rose (*Rosa pisocarpa*), and western serviceberry (*Amalanchier alnifolia*) all achieved five percent or greater relative cover. Wood’s rose account for nearly 50 percent of relative cover in this zone.

Results for Performance Standard 6
(No more than 30% coverage of reed canarygrass, non-native blackberries and Scotch broom):

The site is likely not meeting this cover standard. Reed canarygrass is visually estimated to be 35-45 percent across the site. While areas of native vegetation have established and outcompeted reed canarygrass, there are still large patches in the PSS/PFO and intended emergent areas (Photo 5). The upland buffer likely has less than 30 percent aerial cover of listed species.

**What is planned for this site?**
The region plans to continue invasive weed control.
Appendix 1 – Planting Plan
(from WSDOT 2008)

![Planting Plan Diagram]

**Legend**
- **Emergent Wetland** (05B08F)
- **Radiata Pine** (Pinus radiata)
- **Saw Palmetto** (Serenoa repens)
- **Red Oak** (Quercus rubra)
- **White Oak** (Quercus alba)
- **Black Oak** (Quercus velutina)
- **Bitterbrush** (Pueraria phaseoloides)
- **Western Red Cedar** (Thuja plicata)

**Radiata Pine (Pinus radiata)**
- **Spacing Type**: 20 ft. In.
- **Quantity**: 207

**Black Oak (Quercus velutina)**
- **Spacing Type**: 20 ft. In.
- **Quantity**: 247

**Red Oak (Quercus rubra)**
- **Spacing Type**: 20 ft. In.
- **Quantity**: 247

**Western Red Cedar (Thuja plicata)**
- **Spacing Type**: 20 ft. In.
- **Quantity**: 247
Appendix 2 – Photo Points

The photographs below were taken from permanent photo-points on September 11, 2018 and document current site development.

Driving Directions:
Head east on SR 270 out of Pullman, WA. The site is located on the south side of SR 270 between Mileposts 7.7 and 8.3, between the highway and the Bill Chipman trail. To access the site, drive past it on SR 270 and turn into a car dealership just east of the site. A gravel road leads behind the dealership that gives you access to the trail. Enter the site from the trail.
Appendix 3 – Delineation Report
WETLAND DELINEATION REPORT UPDATE
VERIFICATION OF WETLAND BOUNDARY

SR 270 Patterson Mitigation Site
SR 270 Sunshine Road Mitigation Site

SR 270 Pullman to Idaho State Line
USACE 2005002255
Ecology WQC Order 2847

Whitman County, Washington

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

March 2019
Introduction

This report was prepared by the Washington State Department of Transportation (WSDOT) to describe the wetland boundary delineation for the SR 270 Patterson and SR 270 Sunshine Road Mitigation Sites. These two mitigation sites, combined with SR 270 Jorstad, which has already been closed out, mitigate unavoidable wetland impacts resulting from the SR 270 Pullman to Idaho State Line Project. The SR 270 Jorstad site is not discussed in this report. Field work was conducted by WSDOT wetland biologists Jennie Husby, Kristen Andrews, Tom Mohagen, and Sean Patrick on April 24, 2018. The delineation identifies 3.81 acres of wetland within the SR 270 Patterson mitigation site boundaries and 2.40 acres of wetland within the SR 270 Sunshine mitigating site boundaries.

The wetlands were previously delineated in April 2012 (WSDOT 2013). The purpose of the 2018 field work was to reevaluate the 2012 wetland boundaries and document any wetland boundary modifications if necessary. The 2018 delineation resulted in minor wetland boundary amendments at the SR 270 Patterson Mitigation Site. The 2018 delineation confirmed the wetland boundary remains unchanged from 2012 to 2018 for SR 270 Sunshine Road.

<table>
<thead>
<tr>
<th>General Information for the SR 270 Mitigation Sites</th>
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</thead>
<tbody>
<tr>
<td><strong>USACE Permit Number</strong></td>
</tr>
<tr>
<td><strong>Ecology WQC Order</strong></td>
</tr>
<tr>
<td><strong>Land Resource Region (LRR)</strong></td>
</tr>
<tr>
<td><strong>Major Land Resource Area (MLRA)</strong></td>
</tr>
<tr>
<td><strong>Construction Date</strong></td>
</tr>
<tr>
<td><strong>Monitoring Period</strong></td>
</tr>
<tr>
<td><strong>Year of Monitoring</strong></td>
</tr>
<tr>
<td><strong>Area of Project Impact</strong>: USACE and Ecology regulated wetland impacts</td>
</tr>
<tr>
<td><strong>Area of Project Impact</strong>: Additional isolated wetlands regulated only by Ecology</td>
</tr>
<tr>
<td><strong>Type of Mitigation</strong></td>
</tr>
<tr>
<td><strong>SR 270 Patterson</strong></td>
</tr>
<tr>
<td><strong>SR 270 Sunshine Road</strong></td>
</tr>
</tbody>
</table>

1 Project impact and required acreages from Final Wetland Mitigation Plan with January 6, 2006 updates (WSDOT 2006).
Location

Figure 1. Vicinity Map
Methods

Wetland boundaries within the SR 270 Patterson and SR 270 Sunshine Road Mitigation Sites were verified and amended as necessary 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: Arid West Region (Version 2.0) (USACE 2008)

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) equipped Panasonic Toughpad paired with a Trimble R2 Global Navigation Satellite System (GNSS) Receiver mapping grade unit was used to
- navigate to prior year delineation boundary
- record 2018 sampling point locations and
- record 2018 wetland boundary amendments where necessary (Figure 2).

Wetland mitigation types were georeferenced for both sites by digitizing the mitigation site as-built planting plan in ArcGIS 10.5.1. Inherent in both GPS and georeferencing are minute errors, resulting in slight inaccuracies in both boundary line placement and acreage calculations. These tools represent the best available methods at the time of the study and report preparation.

Wetland Delineation and Study Area

Study Area
Wetlands described in this report were assessed only within the wetland mitigation site boundary (Figure 2).

Precipitation
The Regional Delineation Supplement Version 2.0 (USACE 2008) 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. When considering the three prior months as a whole, normal precipitation conditions were present prior to field work, with each of the three months prior to field work within the normal range (Appendix B-1).

Moderate precipitation was recorded in the ten days preceding field work (Appendix B-2).
Growing Season
The following evidence of the growing season was observed at the time of the delineation:

- New vegetative growth was present on some herbaceous plants including reed canarygrass (*Phalaris arundinacea*).
- The leaves on several woody species were partially or fully emerged including golden currant (*Ribes aureum*) and snowberry (*Symphoricarpos albus*).
- Bud break had occurred on willows (*Salix spp.*) and golden currant was in flower.
SR 270 Patterson Delineation Results

Wetland Changes Since 2012
The SR 270 Patterson Mitigation Site remains in similar condition as documented in 2012. Slight variations in the wetland boundary were documented. The 2012 delineation was performed during a period with wetter than normal precipitation; consequently several seeps were expressing water and were included in the 2012 delineation. The 2018 delineation was performed during a period with normal precipitation and the delineation boundary was reduced in one area where the seeps were not evident in 2018 and other wetland indicators were also lacking in that area.

Wetland Boundary Verification
The 2018 delineation verification determined 3.81 acres of wetland were present within the SR 270 Patterson Mitigation Site. Minor wetland boundary amendments were made in 2018 and likely represent minor changes in observable field conditions and variations in yearly precipitation accumulation.

Delineation data were collected at six sampling points and recorded on wetland determination data forms (Appendix A). Paired wetland and upland sample points were used to define the wetland edge and were placed in locations documenting where the wetland boundary has remained unchanged, and in locations where the wetland boundary required adjustment.

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.

<table>
<thead>
<tr>
<th>SR 270 Patterson – Location, Mitigation Requirements, and Delineation Results</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Long./Lat. ID Number</strong></td>
</tr>
<tr>
<td><strong>Section, Township, Range</strong></td>
</tr>
<tr>
<td><strong>WSDOT Biologists</strong></td>
</tr>
<tr>
<td><strong>Delineation Date</strong></td>
</tr>
<tr>
<td><strong>Type of Mitigation</strong></td>
</tr>
<tr>
<td>Establishment/Enhancement</td>
</tr>
<tr>
<td>Stream Channel</td>
</tr>
<tr>
<td><strong>Total Delineated Wetland Area</strong></td>
</tr>
</tbody>
</table>
Figure 2. 2018 Delineation and Mitigation Types Map.
### SR 270 Patterson Mitigation Site – Wetland Delineation Summary

<table>
<thead>
<tr>
<th>Total Delineated Wetland Area</th>
<th>3.81 acres</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Wetland Determination Data</strong></td>
<td>Appendix A; Sampling Points W1-SP2, W2-SP2, W3-SP1</td>
</tr>
<tr>
<td>Form(s)</td>
<td></td>
</tr>
<tr>
<td><strong>Upland Determination Data</strong></td>
<td>Appendix A; Sampling Points W1-SP1, W2-SP1, W3-SP2</td>
</tr>
<tr>
<td>Form(s)</td>
<td></td>
</tr>
<tr>
<td><strong>Delineator(s)</strong></td>
<td>Kristen Andrews, Jennie Husby</td>
</tr>
<tr>
<td><strong>Delineation Date</strong></td>
<td>April 24, 2018</td>
</tr>
</tbody>
</table>

### Vegetation
- **Trees** – none
- **Shrubs** – Wood’s rose (*Rosa woodsii*), golden currant (*Ribes aureum*), snowberry (*Symphoricarpos albus*)
- **Herbs** – Reed canarygrass (*Phalaris arundinacea*), bentgrasses (*Agrostis spp.*)

### Soils
Soils examined to a depth of 16 inches exhibited hydric characteristics. Matrix colors of 10YR 2/1 were observed. Redoximorphic concentrations were observed in lower layers. Indicators Redox Dark Surface (F6) met.

### Hydrology
Areas of inundation to greater than two inches, soils saturated in the upper twelve inches, and a high water table within twelve inches of the surface were observed throughout the wetland. Water in observations pits was observed between 4 to 9 inches below the surface near the wetland boundary. Indicators Surface Water (A1), High Water table (A2), Saturation (A3), Drift Deposits (B3), Drainage Patterns (B10), and FAC-neutral Test (D5) met.

Paradise Creek flows through an incised channel running through the site. This creek has flashy hydrology associated with precipitation events. Overbank flooding provides the dominant source of hydrology for this site. In addition, overland flow and subsurface seeps from surrounding hills also contribute significant sources of hydrology to some areas of this site. Depressional topography on riverine terraces with fine grained mineral soils retain these hydrologic inputs for long periods during the growing season.

### Rationale for Delineation
Positive indicators of all three wetland criteria are present. Placement of boundary determined by all three wetland factors and topographic break, with reliance on hydrology indicators and topography.
SR 270 Sunshine Road Delineation Results

Wetland Changes Since 2012
The SR 270 Sunshine Mitigation Site remains in similar condition as documented in 2012. The wetland boundary and acreage remains unchanged. The vegetation community remains in similar condition, with a palustrine emergent (PEM) and palustrine scrub-shrub (PSS) vegetation characterizing the vegetation communities.

Wetland Boundary Verification
The 2018 delineation verification determined 2.40 acres of wetland were present within the SR 270 Sunshine Road Mitigation Site. The wetland boundary and wetland area remains unchanged from conditions documented in 2012.

Delineation data were collected at three sampling points and recorded on wetland determination data forms (Appendix A). Paired wetland and upland sample points were used to define the wetland edge and were placed in locations documenting representative areas of the wetland boundary and show the wetland boundary has remained unchanged.

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.

<table>
<thead>
<tr>
<th>SR 270 Sunshine Road – Location, Mitigation Requirements, and Delineation Results</th>
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<tbody>
<tr>
<td><strong>Long./Lat. ID Number</strong></td>
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<td><strong>Section, Township, Range</strong></td>
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<td><strong>WSDOT Biologists</strong></td>
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<td><strong>Delineation Date</strong></td>
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<tr>
<td><strong>Type of Mitigation</strong></td>
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<tr>
<td>Establishment</td>
</tr>
<tr>
<td><strong>Total Delineated Wetland Mitigation Area</strong></td>
</tr>
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</table>
Figure 3. 2018 Delineation and Mitigation Types Map.
SR 270 Sunshine Road Mitigation Site – Wetland Delineation Summary

<table>
<thead>
<tr>
<th>Total Delineated Wetland Area</th>
<th>2.40 acres</th>
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<tr>
<td>Wetland Determination Data Form(s)</td>
<td>Appendix A; Sampling Points W1-SP1, W1-SP2</td>
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<tr>
<td>Upland Determination Data Form(s)</td>
<td>Appendix A; Sampling Point W1-SP3</td>
</tr>
<tr>
<td>Delineator(s)</td>
<td>Tom Mohagen, Sean Patrick</td>
</tr>
<tr>
<td>Delineation Date</td>
<td>April 24, 2018</td>
</tr>
</tbody>
</table>

Vegetation

- Trees – none
- Shrubs – Pacific willow (*Salix lasiandra*), black cottonwood (*Populus balsamifera*) saplings
- Herbs – reed canarygrass, broadleaf cattail (*Typha latifolia*)

Soils

- Soils examined to a depth of 16 inches exhibited hydric characteristics. Matrix colors of 10YR 3/1 and 10YR 3/2 were observed. Redoximorphic concentrations and depletions were observed in the lower layer. Indicator Redox Dark Surface (F6) met.

Hydrology

- Areas of inundation to greater than 12 inches, soils saturated in the upper twelve inches, and a high water table within twelve inches of the surface were observed throughout the wetland. Water in observations pits was observed between 6 to 12 inches below the surface near the wetland boundary. Indicators Surface Water (A1), High Water table (A2), Saturation (A3), and FAC-neutral Test (D5) met.
- Paradise Creek flows along the south side of the site. Overbank flooding provides the dominant source of hydrology for the western portion of the site resulting in a riverine flow-through system. When peak flood waters reside, a depressional area retains surface water for long periods during the growing season. A high water table maintains prolonged inundation and groundwater throughout the wetland.

Rationale for Delineation

- Positive indicators of all three wetland criteria are present. Placement of boundary determined by all three wetland factors, with a reliance on hydrology indicators and topographic break along northern wetland boundary.
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


Wetland Delineation Data Forms for:

SR 270 Patterson
W1-SP1
W1-SP2
W2-SP1
W2-SP2
W3-SP1
W3-SP2

SR 270 Sunshine Road
W1-SP1
W1-SP2
W1-SP3

Wetland polygons, sampling point locations, and wetland names shown in Figure 2 and 3.
### WETLAND DETERMINATION DATA FORM – Arid West Region

| Project/Site: 270 Patterson | City/County: n/a /Whitman | Sampling Date: 4/24/2018 |
| Applicant/Owner: WSDOT | State: WA | Sampling Point: W1-SP1 |
| Investigator(s): Jennie Husby, Kristen Andrews | Section, Township, Range: S31, T15N,R 46E |
| Landform (hillslope, terrace, etc.): hillslope | Local relief (concave, convex, none): convex |
| Slope (%): 5 |

| Subregion (LRR): B | Lat: 46.737 | Long: -177.072 | Datum: NAD83HARN |
| Soil Map Unit Name: Caldwell Silt 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

**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)

- 1.  
- 2.  
- 3.  
- 4.  

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

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

- 1. *Rosa woodsii*  
- 2. *Amelanchier alnifolia*  
- 3. *Symphoricarpos albus*  
- 4.  
- 5.  

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

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

- 1. *Phalanthus arundinacea*  
- 2. *agrostis sp.*  
- 3. *bunch grass*  
- 4.  
- 5.  
- 6.  
- 7.  
- 8.  

**Absolute % Cover**  
**Dom. Sp.?**  
**Relative % Cover**

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

- 1.  
- 2.  

**Absolute % Cover**  

**Remarks:**

### Hydrophytic Vegetation Indicators:

- Dominance Test is >50%
- Prevalence Index is ≤3.0
- Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
- Problematic Hydrophytic Vegetation¹ (Explain)

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

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

---

**Remarks:**

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

**% Bare Ground in Herb Stratum**  
**% Cover of Biotic Crust**
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>0-20</td>
<td>7.5YR</td>
<td>2.5/1</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Restrictive Layer (if present):
Type: __________________________
Depth (inches): __________________________

Hydric Soil Present?  O Yes  O No

Remarks:

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

☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5) (LRR C)
☐ 1 cm Muck (A9) (LRR D)
☐ 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)
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Redox Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils³:

☐ 1 cm Muck (A9) (LRR C)
☐ 2 cm Muck (A10) (LRR B)
☐ Reduced Vertic (F18)
☐ Red Parent Material (TF2)
☐ Other (Explain in Remarks)

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

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) (Nonriverine)
☐ Sediment Deposits (B2) (Nonriverine)
☐ Drift Deposits (B3) (Nonriverine)
☐ Surface Soil Cracks (B6)
☐ Inundation Visible on Aerial Imagery (B7)
☐ Water-Stained Leaves (B9)
☐ Salt Crust (B11)
☐ Biotic Crust (B12)
☐ 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)
☐ Thick Muck Surface (C7)
☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

☐ Water Marks (B1) (Riverine)
☐ Sediment Deposits (B2) (Riverine)
☐ Drainage Patterns (B10)
☐ Dry-Season Water Table (C2)
☐ Crayfish Burrows (C8)
☐ Saturation Visible on Aerial Imagery (C9)
☐ Shallow Aquitard (D3)
☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?  O Yes  O No
Water Table Present?  O Yes  O No
Saturation Present?  O Yes  O No

Depth (inches): ______________  ______________

Wetland Hydrology Present?  O Yes  O No

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

Remarks:
WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: 270 Patterson
City/County: n/a /Whitman
Applicant/Owner: WSDOT
State: WA
Investigator(s): Jennie Husby, Kristen Andrews
Sampling Date: 4/24/2018
Section, Township, Range: S1, T14N, R45E
Landform (hillslope, terrace, etc.): hillslope
Local relief (concave, convex, none): concave
Slope (%): 5
Subregion (LRR): B
Lat: 46.733
Long: -117.079
Datum: NAD83HARN
Soil Map Unit Name: Caldwell Silt 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
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) | Absolute Dom. Relative Indicator |
|---------------------------------------|---------------------------------|-----------------|-----------------|
| 1.                                   | % Cover Sp.? % Cover Status     |
| 2.                                   |                                |
| 3.                                   |                                |
| 4.                                   |                                |
| = Total Cover                        |                                |

<table>
<thead>
<tr>
<th>Sapling/Shrub Stratum (Plot size: 15ft x 15ft)</th>
<th>% Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Rosa woodsii</td>
<td>50 Y</td>
</tr>
<tr>
<td>2. Amelanchier alnifolia</td>
<td>5 N</td>
</tr>
<tr>
<td>3. Symphoricarpos albus</td>
<td>5 N</td>
</tr>
<tr>
<td>4. Ribes aureum</td>
<td>10 N</td>
</tr>
<tr>
<td>= Total Cover</td>
<td>70</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Herb Stratum (Plot size: 5ft x 5ft)</th>
<th>% Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Phalanis arundinacea</td>
<td>80 Y</td>
</tr>
<tr>
<td>2. agrostis sp.</td>
<td>10 N</td>
</tr>
<tr>
<td>= Total Cover</td>
<td>90</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Woody Vine Stratum (Plot size: 5ft x 5ft)</th>
<th>% Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
</tr>
<tr>
<td>= Total Cover</td>
<td></td>
</tr>
</tbody>
</table>

Hydrophytic Vegetation Present? (Yes) No

Remarks:

Hydrophytic Vegetation Indicators:

<table>
<thead>
<tr>
<th>Dominance Test worksheet:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)</td>
</tr>
<tr>
<td>Total Number of Dominant Species Across All Strata: 2 (B)</td>
</tr>
<tr>
<td>Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0% (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>0 x 1 = 0</td>
</tr>
<tr>
<td>FACW species</td>
<td>80 x 2 = 160</td>
</tr>
<tr>
<td>FAC species</td>
<td>10 x 3 = 30</td>
</tr>
<tr>
<td>FACU species</td>
<td>60 x 4 = 240</td>
</tr>
<tr>
<td>UPL species</td>
<td>0 x 5 = 0</td>
</tr>
<tr>
<td>Column Totals:</td>
<td>150 (A) 430 (B)</td>
</tr>
</tbody>
</table>

Prevalence Index = B/A = 2.867

Hydrophytic Vegetation Indicators:

<table>
<thead>
<tr>
<th>Hydrophytic Vegetation Present?</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Yes) No</td>
</tr>
</tbody>
</table>

Remarks:

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

Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

Remainder of form includes sections for additional vegetation data, soil map unit details, and hydrophytic vegetation indicators.
SOIL

Sampling Point: W1-SP2

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>
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<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.)

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Histosol (A1)</td>
<td>Sandy Redox (S5)</td>
</tr>
<tr>
<td>Histic Epipedon (A2)</td>
<td>Stripped Matrix (S6)</td>
</tr>
<tr>
<td>Black Histic (A3)</td>
<td>Loamy Mucky Mineral (F1)</td>
</tr>
<tr>
<td>Hydrogen Sulfide (A4)</td>
<td>Loamy Gleyed Matrix (F2)</td>
</tr>
<tr>
<td>Stratified Layers (AS) (LRR C)</td>
<td>Depleted Matrix (F3)</td>
</tr>
<tr>
<td>1 cm Muck (A9) (LRR D)</td>
<td>Redox Dark Surface (F6)</td>
</tr>
<tr>
<td>Depleted Below Dark Surface (A11)</td>
<td>Depleted Dark Surface (F7)</td>
</tr>
<tr>
<td>Thick Dark Surface (A12)</td>
<td>Redox Depressions (F8)</td>
</tr>
<tr>
<td>Sandy Mucky Mineral (S1)</td>
<td>Vernal Pools (F9)</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>
</tr>
</thead>
</table>

Hydric Soil Present? ○ Yes ○ No

Remarks:
A soil pit was not excavated due to the presence of water (see hydrology section below). This soil meets the definition of a hydric soil due to the presence of inundation, saturation, or a high water table for extended periods during the growing season.

HYDROLOGY

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

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1) (Nonriverine)
- Sediment Deposits (B2) (Nonriverine)
- Drift Deposits (B3) (Nonriverine)
- Surface Soil Cracks (B6)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- Salt Crust (B11)
- Biotic Crust (B12)
- 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)
- Thick Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- Water Marks (B1) (Riverine)
- Sediment Deposits (B2) (Riverine)
- Drainage Patterns (B10)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

- Surface Water Present? ○ Yes ○ No Depth (inches): 2
- Water Table Present? ○ Yes ○ No Depth (inches): (includes capillary fringe)
- Saturation Present? ○ Yes ○ No Depth (inches): (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 – Arid West Region

Project/Site: 270 Patterson
Applicant/Owner: WSDOT
City/County: n/a /Whitman
State: WA
Sampling Date: 4/24/2018
Investigator(s): Jennie Husby, Kristen Andrews
Section, Township, Range: S1, T14N, R45E
Landform (hillslope, terrace, etc.): hillslope
Local relief (concave, convex, none): none
Slope (%): 10
Subregion (LRR): B
Lat: 46.733
Long: -117.079
Datum: NAD83HARN
Soil Map Unit Name: Caldwell Silt loam
NWI Classification: upland

Arid West – Version 2.0

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.

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of: Multiply by:

OBL species 0 x 1 = 0
FACW species 5 x 2 = 10
FAC species 15 x 3 = 45
FACU species 45 x 4 = 180
UPL species 10 x 5 = 50
Column Totals: 75 (A) 285 (B)
Prevalence Index = B/A = 3.800

Hydrophytic Vegetation Indicators:

☐ Dominance Test is >50%
☐ Prevalence Index is ≤3.0%
☐ Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
☐ Problematic Hydrophytic Vegetation¹ (Explain)

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

Remarks:

Jennie Husby, Kristen Andrews
S1, T14N, R45E

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>
<th>Color (moist)</th>
<th>%</th>
<th>Type¹</th>
<th>Loc²</th>
<th>Texture</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-20</td>
<td>7.5YR</td>
<td>3/2</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Silt Loam</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)
- Stratified Layers (A5) (LRR C)
- 1 cm Muck (A9) (LRR D)
- 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 Matrix (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Vernal Pools (F9)

### 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) (Nonriverine)
- Sediment Deposits (B2) (Nonriverine)
- Drift Deposits (B3) (Nonriverine)
- Surface Soil Cracks (B6)
- Inundation Visible on Aerial Imagery (B7)
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- 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)
- Thick Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- Water Marks (B1) (Riverine)
- Sediment Deposits (B2) (Riverine)
- Drift Deposits (B3) (Riverine)
- Drainage Patterns (B10)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

### Field Observations:

Surface Water Present? ○ Yes ○ No Depth (inches): ______

Water Table Present? ○ Yes ○ No Depth (inches): ______

Saturation Present? ○ Yes ○ No Depth (inches): ______

Wetland Hydrology Present? ○ Yes ○ No

Remarks:

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

Remarks:
## WETLAND DETERMINATION DATA FORM – Arid West Region

### Project/Site: 270 Patterson  
City/County: n/a /Whitman  
Sampling Date: 4/24/2018  
Applicant/Owner: WSDOT  
State: WA  
Sample Point: W2-SP2  
Investigator(s): Jennie Husby, Kristen Andrews  
Section, Township, Range: S1, T14N, R45E  
Landform (hillslope, terrace, etc.): depression  
Local relief (concave, convex, none): concave  
Slope (%): 2  
Subregion (LRR): B  
Lat: 46.733  
Long: -117.079  
Datum: NAD83HARN  
Soil Map Unit Name: Caldwell Silt Loam  
NWI Classification: PSS  

### Are climatic / hydrologic conditions on the site typical for this time of year?  
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>
</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.

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

<table>
<thead>
<tr>
<th>Tree</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>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Species</th>
<th>Absolute % Cover</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Symphoricarpos albus</td>
<td>7</td>
<td>FACU</td>
</tr>
<tr>
<td>2. Rosa woodsii</td>
<td>5</td>
<td>FACU</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Species</th>
<th>Absolute % Cover</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Phalanius arundinacea</td>
<td>60</td>
<td>FACW</td>
</tr>
<tr>
<td>2. Unknown grass</td>
<td>5</td>
<td>#N/A</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Woody Vine</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>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>4.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Remarks:

- Dominance Test worksheet:
  - Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
  - Total Number of Dominant Species Across All Strata: 3 (B)
  - Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3% (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>0 x 1 = 0</td>
</tr>
<tr>
<td>FACW species</td>
<td>60 x 2 = 120</td>
</tr>
<tr>
<td>FACU species</td>
<td>12 x 4 = 48</td>
</tr>
<tr>
<td>UPL species</td>
<td>0 x 5 = 0</td>
</tr>
<tr>
<td>Column Totals:</td>
<td>72 (A)</td>
</tr>
</tbody>
</table>

- Prevalence Index = B/A = 2.333

#### Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

#### Hydrophytic Vegetation Indicators:

- Dominance Test is >50%
- Prevalence Index is ≤3.0¹
- Morphological Adaptations¹
- Problematic Hydrophytic Vegetation¹ (Explain)

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

### Remarks:

- % Bare Ground in Herb Stratum: 35
- % Cover of Biotic Crust: 

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.
### 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>Type</th>
<th>Loc</th>
<th>Texture</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></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)
- Stratified Layers (A5) (LRR C)
- 1 cm Muck (A9) (LRR D)
- 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)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

**Restrictive Layer (if present):**

- Type: 
- Depth (inches): 

**Hydric Soil Present?**  Yes  No

**Remarks:**

A soil pit was not excavated due to the presence of water (see hydrology section below). This soil meets the definition of a hydric soil due to the presence of inundation, saturation, or a high water table for extended periods during the growing season.

### HYDROLOGY

**Wetland Hydrology Indicators:**

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1) (Nonriverine)
- Sediment Deposits (B2) (Nonriverine)
- Drift Deposits (B3) (Nonriverine)
- Surface Soil Cracks (B6)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- Salt Crust (B11)
- Biotic Crust (B12)
- 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)
- Thick Muck Surface (C7)

**Secondary Indicators:**

- Water Marks (B1) (Riverine)
- Sediment Deposits (B2) (Riverine)
- Drift Deposits (B3) (Riverine)
- Drainage Patterns (B10)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

**Field Observations:**

- Surface Water Present?  Yes  No  Depth (inches): 2
- Water Table Present?  Yes  No  Depth (inches): 0
- Saturation Present?  Yes  No  Depth (inches): 0

**Wetland Hydrology Present?**  Yes  No

**Remarks:**

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available.
WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: 270 Patterson  City/County: n/a /Whitman  Sampling Date: 4/24/2018
Applicant/Owner: WSDOT  State: WA  Sampling Point: W3-SP1
Investigator(s): Tom Mohagen, Sean Patrick  Section, Township, Range: S31, T15N, R46E
Landform (hillslope, terrace, etc.): floodplain  Local relief (concave, convex, none): concave  Slope (%): 10
Subregion (LRR): B  Lat: 46.733  Long: -117.079  Datum: NAD83HARN
Soil Map Unit Name: Caldwell Silt Loam  NWI Classification: PEM

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

<table>
<thead>
<tr>
<th>Hydrophytic Vegetation Present?</th>
<th>☐ Yes</th>
<th>☐ No</th>
<th>Is the Sampled Area within a Wetland?</th>
<th>☐ Yes</th>
<th>☐ No</th>
</tr>
</thead>
</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>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>3.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>= Total Cover</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<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.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></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>
<tr>
<td>= Total Cover</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<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. Phalaris arundinacea</td>
<td>100</td>
<td>Y</td>
<td>100.0</td>
<td>FACW</td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<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>
<tr>
<td>= Total Cover</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<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>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>= Total Cover</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>% Bare Ground in Herb Stratum</th>
<th>0</th>
<th>% Cover of Biotic Crust</th>
<th></th>
</tr>
</thead>
</table>

Remarks:

Hydrophytic Vegetation Indicators:
- ☑ Dominance Test is >50%
- ☑ Prevalence Index is ≤3.0
- ☑ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation (Explain)

Hydrophytic Vegetation Present? ☐ Yes ☐ No

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>100 x 2 = 200</td>
</tr>
<tr>
<td>FAC species</td>
<td>0 x 3 = 0</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>100 (A) 200 (B)</td>
</tr>
</tbody>
</table>

Prevalence Index = B/A = 2000

Hydrophytic Soil Present? ☑ Yes ☐ No

Wetland Hydrology Present? ☑ Yes ☐ No

Are climatic / hydrologic conditions on the site typical for this time of year? ☑ 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.)

Remarks:

Dominance Test worksheet:

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

Remarks:

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

US Army Corps of Engineers (WSDOT Adapted Form - Updated April 2018)
### 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>2/1</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5-16</td>
<td>10YR</td>
<td>2/1</td>
<td>98</td>
<td>4/6</td>
<td>2</td>
<td>C</td>
<td>M</td>
<td>Silt Loam concentration is prominent</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)
- Stratified Layers (A5) (LRR C)
- 1 cm Muck (A9) (LRR D)
- 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)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Vernal Pools (F9)

### 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) (Nonriverine)
  - Sediment Deposits (B2) (Nonriverine)
  - Drift Deposits (B3) (Nonriverine)
  - Surface Soil Cracks (B6)
  - Inundation Visible on Aerial Imagery (B7)
  - Water-Stained Leaves (B9)
  - Salt Crust (B11)
  - Biotic Crust (B12)
  - Aquatic Invertebrates (B13)
  - Hydrogen Sulfide Odor (C1)
  - Presence of Reduced Iron (C4)
  - Recent Iron Reduction in Tilled Soils (C6)
  - Thick Muck Surface (C7)
  - Other (Explain in Remarks)

- Secondary Indicators (2 or more required)
  - Water Marks (B1) (Riverine)
  - Sediment Deposits (B2) (Riverine)
  - Drainage Patterns (B10)
  - Dry-Season Water Table (C2)
  - Crayfish Burrows (C8)
  - Saturation Visible on Aerial Imagery (C9)
  - Shallow Aquitard (D3)
  - FAC-Neutral Test (D5)

#### Field Observations:

- Surface Water Present?  ○ Yes  ○ No  Depth (inches): __________
- Water Table Present?  ○ Yes  ○ No  Depth (inches): __________
- Saturation Present?  ○ 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 – Arid West Region

**Project/Site:** 270 Patterson  
**City/County:** n/a / Whitman  
**Sampling Date:** 4/24/2018  
**Applicant/Owner:** WSDOT  
**State:** WA  
**Investigator(s):** Sean Patrick, Tom Mohagen  
**Section, Township, Range:** S31, T15N, R46E  
**Landform (hillslope, terrace, etc.):** floodplain  
**Local relief (concave, convex, none):** concave  
**Slope (%):** 30  
**Subregion (LRR):** B  
**Lat:** 46.733  
**Long:** -117.079  
**Datum:** NAD83HARN  
**Soil Map Unit Name:** Caldwell Silt 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.)

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

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

**Remarks:**

### VEGETATION – Use scientific names of plants.

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

<table>
<thead>
<tr>
<th>Tree Species</th>
<th>% Cover</th>
<th>% Cover</th>
<th>Indicator</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>3.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Shrub Species</th>
<th>% Cover</th>
<th>Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Rosa pisocarpa</td>
<td>5</td>
<td>FAC</td>
</tr>
<tr>
<td>2. Symphoricarpus albus</td>
<td>2</td>
<td>FACU</td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>7</td>
<td>Total Cover</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Herb Species</th>
<th>% Cover</th>
<th>Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Phalans arundinacea</td>
<td>65</td>
<td>FACW</td>
</tr>
<tr>
<td>2. Conium maculatum</td>
<td>1</td>
<td>FACW</td>
</tr>
<tr>
<td>3. Cirsium vulgare</td>
<td>2</td>
<td>FACU</td>
</tr>
<tr>
<td>4. Agrostis sp</td>
<td>30</td>
<td>FACU</td>
</tr>
<tr>
<td>5.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>98</td>
<td>Total Cover</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Woody Vine</th>
<th>% Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
</tr>
</tbody>
</table>

**Remarks:**

### Dominance Test worksheet:

- Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
- Total Number of Dominant Species Across All Strata: 4 (B)
- Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

### Prevalence Index worksheet:

- Total % Cover of:
  - OBL species 0 x 1 = 0
  - FACW species 66 x 2 = 132
  - FAC species 5 x 3 = 15
  - FACU species 4 x 4 = 16
  - UPL species 0 x 5 = 0
- Column Totals: 75 (A) 163 (B)
- Prevalence Index = B/A = 2.173

### Hydrophytic Vegetation Indicators:

- Dominance Test is >50%
- Prevalence Index is ≤3.0
- Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
- Problematic Hydrophytic Vegetation¹ (Explain)

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

**Remarks:**

% Bare Ground in Herb Stratum 2  
% Cover of Biotic Crust 0

#### 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>Texture</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-16</td>
<td>10YR</td>
<td>3/1</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td>Silt Loam</td>
<td></td>
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</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)
- Stratified Layers (AS) (LRR C)
- 1 cm Muck (A9) (LRR D)
- 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)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Redox Dark Surface (F6)
- Vernal Pools (F9)

### Restrictive Layer (if present):

- Type: ____________________________
- Depth (inches): __________________

### Remarks:

### Hydric 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) (Nonriverine)
- Sediment Deposits (B2) (Nonriverine)
- Drift Deposits (B3) (Nonriverine)
- Surface Soil Cracks (B6)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- Salt Crust (B11)
- Biotic Crust (B12)
- 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)
- Thick Muck Surface (C7)
- Other (Explain in Remarks)

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

- Water Marks (B1) (Riverine)
- Sediment Deposits (B2) (Riverine)
- Drainage Patterns (B10)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

### Field Observations:

- Surface Water Present?  ○ Yes  ○ No  Depth (inches): ________
- Water Table Present?  ○ Yes  ○ No  Depth (inches): ________
- Saturation Present?  ○ Yes  ○ No  Depth (inches): ________

**Wetland Hydrology Present?  ○ Yes  ○ No**

### Remarks:

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

Remarks:
# WETLAND DETERMINATION DATA FORM – Arid West Region

**Project/Site:** 270 Sunshine Road  
**City/County:** n/a/Whitman  
**Applicant/Owner:** WSDOT  
**State:** WA  
**Investigator(s):** Sean Patrick, Tom Mohagen  
**Sampling Date:** 4/24/2018  

<table>
<thead>
<tr>
<th>Subregion (LRR)</th>
<th>Lat: 46.731</th>
<th>Long: -117.089</th>
<th>Datum: NAD83HARN</th>
</tr>
</thead>
</table>

**Soil Map Unit Name:** Caldwell silt loam, 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?  
- 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.

### 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)

<table>
<thead>
<tr>
<th>#</th>
<th>Common Name</th>
<th>% Absolute Cover</th>
<th>% Relative Cover</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Salix lasiandra</td>
<td>5</td>
<td>Y</td>
<td>100.0</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>3</td>
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<tr>
<td>4</td>
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<tr>
<td>5</td>
<td></td>
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</tr>
</tbody>
</table>

** Total Cover: **

**Remarks:**

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

<table>
<thead>
<tr>
<th>#</th>
<th>Common Name</th>
<th>% Absolute Cover</th>
<th>% Relative Cover</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Salix lasiandra</td>
<td>5</td>
<td>Y</td>
<td>100.0</td>
</tr>
<tr>
<td>2</td>
<td></td>
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<td>3</td>
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<td>5</td>
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</tbody>
</table>

** Total Cover: **

**Remarks:**

### Herb Stratum  
(Plot size: 15ft x 15ft)

<table>
<thead>
<tr>
<th>#</th>
<th>Common Name</th>
<th>% Absolute Cover</th>
<th>% Relative Cover</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Phalaris arundinacea</td>
<td>30</td>
<td>Y</td>
<td>75.0</td>
</tr>
<tr>
<td>2</td>
<td>Typha latifolia</td>
<td>10</td>
<td>Y</td>
<td>25.0</td>
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<tr>
<td>3</td>
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<td>5</td>
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</tbody>
</table>

** Total Cover: **

**Remarks:**

### Woody Vine Stratum  
(Plot size: 15ft x 15ft)

<table>
<thead>
<tr>
<th>#</th>
<th>Common Name</th>
<th>% Absolute Cover</th>
<th>% Relative Cover</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>2</td>
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</tr>
</tbody>
</table>

** Total Cover: **

**Remarks:**

### Remarks:

### Hydrophytic Vegetation Indicators:

- **Dominance Test:**
  - Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)
  - Total Number of Dominant Species Across All Strata: 3 (B)
  - Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

**Prevalence Index:**

** Total % Cover of: ** Multiply by:

<table>
<thead>
<tr>
<th>Species</th>
<th>% Cover</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>OBL</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>FACW</td>
<td>35</td>
<td></td>
</tr>
<tr>
<td>FAC</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>FACU</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>UPL</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

** Column Totals: ** 45 (A) 80 (B)

** Prevalence Index = B/A = 1.778 **

### Remarks:

**Hydrophytic Vegetation Present?**  
- Yes  
- No

---

**US Army Corps of Engineers (WSDOT Adapted Form - Updated April 2018)  
Arid West – Version 2.0**
### 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></td>
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</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>Type¹</th>
<th>Location²</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>Stratified Layers (A5) (LRR C)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 cm Muck (A9) (LRR D)</td>
<td></td>
<td></td>
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<tr>
<td>Depleted Below Dark Surface (A11)</td>
<td></td>
<td></td>
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<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>
<tr>
<td>Sandy Redox (S55)</td>
<td></td>
<td></td>
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<tr>
<td>Stripped Matrix (S56)</td>
<td></td>
<td></td>
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<tr>
<td>Loamy Mucky Mineral (F1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loamy Gleyed Matrix (F2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depleted Matrix (F3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Redox Dark Surface (F6)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Redox Depressions (F8)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vernal Pools (F9)</td>
<td></td>
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</tr>
</tbody>
</table>

### Restrictive Layer (if present):

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

### Hydric Soil Present?  ○ Yes  ○ No

Remarks:

A soil pit was not excavated due to the presence of water (see hydrology section below). This soil meets the definition of a hydric soil due to the presence of inundation, saturation, or a high water table for extended periods 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) (Nonriverine)
- Sediment Deposits (B2) (Nonriverine)
- Drift Deposits (B3) (Nonriverine)
- Surface Soil Cracks (B6)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- Salt Crust (B11)
- Biotic Crust (B12)
- 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)
- Thick Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- Water Marks (B1) (Riverine)
- Sediment Deposits (B2) (Riverine)
- Drift Deposits (B3) (Riverine)
- Drainage Patterns (B10)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

#### Field Observations:

| Surface Water Present?  ○ Yes  ○ No | Depth (inches): 12 |
| 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 – Arid West Region

Project/Site: 270 Sunshine Road  
City/County: n/a / Whitman  
Sampling Date: 4/24/2018

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

Investigator(s): Sean Patrick, Tom Mohagen  
Section, Township, Range: S1, T14N, R45E

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

Subregion (LRR): B  
Lat: 46.73  
Long: -127.091  
Datum: NAD83HARN

Soil Map Unit Name: Caldwell silt loam, 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.)

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</th>
<th>(Plot size: 20ft x 20ft)</th>
<th>Absolute % Cover</th>
<th>Domestic Sp.? Seasonal Indicator</th>
<th>Relative % Cover</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</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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<td></td>
</tr>
</tbody>
</table>

= Total Cover

<table>
<thead>
<tr>
<th>Sapling/Shrub Stratum</th>
<th>(Plot size: 15ft x 15ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Salix lasiandra</td>
<td>25 Y 96.2 FACW</td>
</tr>
<tr>
<td>2. Populus balsamifera</td>
<td>1 N 3.8 FAC</td>
</tr>
</tbody>
</table>

= Total Cover

<table>
<thead>
<tr>
<th>Herb Stratum</th>
<th>(Plot size: 5ft x 5ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Phalaris arundinacea</td>
<td>85 Y 94.4 FACW</td>
</tr>
<tr>
<td>2. Typha latifolia</td>
<td>5 N 5.6 OBL</td>
</tr>
</tbody>
</table>

= Total Cover

<table>
<thead>
<tr>
<th>Woody Vine Stratum</th>
<th>(Plot size: 5ft x 5ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
</tr>
</tbody>
</table>

= Total Cover

<table>
<thead>
<tr>
<th>Remarks:</th>
</tr>
</thead>
</table>

Hydrophytic Vegetation Present?  ☐ Yes  ☐ No

Remarks:

Hydrophytic Vegetation Indicators:
☐ Dominance Test is >50%
☐ Prevalence Index is ≤3.0*
☐ Morphological Adaptations* (Provide supporting data in Remarks or on a separate sheet)
☐ Problematic Hydrophytic Vegetation* (Explain)

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

Prevalence Index worksheet:

<table>
<thead>
<tr>
<th>Species</th>
<th>% Cover</th>
<th>Multiply</th>
</tr>
</thead>
<tbody>
<tr>
<td>OBL species</td>
<td>5</td>
<td>1 x 5</td>
</tr>
<tr>
<td>FACW species</td>
<td>110</td>
<td>2 x 220</td>
</tr>
<tr>
<td>FAC species</td>
<td>1</td>
<td>3 x 3</td>
</tr>
<tr>
<td>FACU species</td>
<td>0</td>
<td>4 x 0</td>
</tr>
<tr>
<td>UPL species</td>
<td>0</td>
<td>5 x 0</td>
</tr>
</tbody>
</table>

Column Totals: 116  (

Prevalence Index = B/A = 1.966

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>
<th>Texture</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-6</td>
<td>10YR</td>
<td>3/1 100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6-16</td>
<td>10YR</td>
<td>3/2 72</td>
<td></td>
<td></td>
</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.)

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) (LRR C)
- 1 cm Muck (A9) (LRR D)
- 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)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Vernal Pools (F9)

### Restrictive Layer (if present):

- Type: ________________________________
- Depth (inches): __________________________

### Hydric Soil Present?  
☐ Yes  ☐ No

### HYDROLOGY

#### Wetland Hydrology Indicators:

- Primary Indicators (minimum of one required; check all that apply)
- Secondary Indicators (2 or more required)

<table>
<thead>
<tr>
<th>Field Observations:</th>
<th>Surface Water Present?</th>
<th>Water Table Present?</th>
<th>Saturation Present? (includes capillary fringe)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>☐ Yes ☐ No</td>
<td>☐ Yes ☐ No</td>
<td>☐ Yes ☐ No</td>
</tr>
</tbody>
</table>

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

### Remarks:

---

1. Indicates of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

---
WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: 270 Sunshine Road  City/County: n/a / Whitman  Sampling Date: 4/24/2018
Applicant/Owner: WSDOT  State: WA  Sampling Point: W1-SP3
Investigator(s): Sean Patrick, Tom Mohagen  Section, Township, Range: S1, T14N, R45E
Landform (hillslope, terrace, etc.): floodplain  Local relief (concave, convex, none): convex  Slope (%): 20
Subregion (LRR): B  Lat: 46.73  Long: -127.091  Datum: NAD83HARN
Soil Map Unit Name: Caldwell silt loam, 0 to 3 percent slopes  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.)

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

<table>
<thead>
<tr>
<th>Hydrophytic Vegetation Present?</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydric Soil Present?</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Wetland Hydrology Present?</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

Is the Sampled Area within a Wetland?  Yes  No

Remarks:
Hydrology indicators lacking in upland areas directly adjacent to the wetland boundary, as illustrated by the data at this sample point.

VEGETATION – Use scientific names of plants.

<table>
<thead>
<tr>
<th>Stratum</th>
<th>Plot size</th>
<th>Tree Species</th>
<th>Absolute % Cover</th>
<th>Relative % Cover</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tree Stratum (Plot size: 20ft x 20ft)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<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>Sapling/Shrub Stratum (Plot size: 15ft x 15ft)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.  Cornus alba</td>
<td></td>
<td></td>
<td>35</td>
<td>Y</td>
<td>72.9 FACW</td>
</tr>
<tr>
<td>2.  Symphoricarpus albus</td>
<td></td>
<td></td>
<td>10</td>
<td>Y</td>
<td>20.8 FACU</td>
</tr>
<tr>
<td>3.  Rosa pisocarpa</td>
<td></td>
<td></td>
<td>3</td>
<td>N</td>
<td>6.3 FAC</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>48</td>
<td></td>
<td>Total Cover</td>
</tr>
<tr>
<td>Herb Stratum (Plot size: 5ft x 5ft)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.  Phalaris arundinacea</td>
<td></td>
<td></td>
<td>70</td>
<td>Y</td>
<td>100.0 FACW</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>
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</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>6.</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Woody Vine Stratum (Plot size: 5ft x 5ft)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<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>% Bare Ground in Herb Stratum</td>
<td>30</td>
<td>% Cover of Biotic Crust</td>
<td>0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Remarks:

Hydrophytic Vegetation Indicators:

- Dominance Test is >50%
- Prevalence Index is ≤3.0'
- Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
- Problematic Hydrophytic Vegetation (Explain)

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

Sampling Point: W1-SP3

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 Color (moist)</th>
<th>Texture</th>
<th>Redox Features Color (moist)</th>
<th>%</th>
<th>Type¹</th>
<th>Loc²</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-6</td>
<td>10YR 4/2 84</td>
<td>Silt Loam</td>
<td>10YR 4/4 3</td>
<td>C</td>
<td>M</td>
<td></td>
<td>concentration is distinct</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>7.5YR 5/8 10</td>
<td>C</td>
<td>M</td>
<td></td>
<td>concentration is prominent</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>10YR 5/2 3</td>
<td>D</td>
<td>M</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6-18</td>
<td>10YR 4/1 82</td>
<td>Silt Loam</td>
<td>10YR 6/2 15</td>
<td>D</td>
<td>M</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Loc=Loc²ation: 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)
- Stratified Layers (A5) (LRR C)
- 1 cm Muck (A9) (LRR D)
- 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? ☐ Yes ☐ No
Remarks:

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR C)
- 2 cm Muck (A10) (LRR B)
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Other (Explain in Remarks)

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

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) (Nonriverine)
- Sediment Deposits (B2) (Nonriverine)
- Drift Deposits (B3) (Nonriverine)
- Surface Soil Cracks (B6)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)

Secondary Indicators (2 or more required)
- Salt Crust (B11)
- Biotic Crust (B12)
- 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)
- Thick Muck Surface (C7)
- Other (Explain in Remarks)

Water Marks (B1) (Riverine)
- Sediment Deposits (B2) (Riverine)
- Drainage Patterns (B10)
- Recent Iron Reduction in Tilled Soils (C6)
- Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

- Surface Water Present? ☐ Yes ☐ No Depth (inches): ________________
- Water Table Present? ☐ Yes ☐ No Depth (inches): ________________
- Saturation Present? ☐ Yes ☐ No Depth (inches): ________________

Wetland Hydrology Present? ☐ Yes ☐ No

Remarks:

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

Remarks:
## Appendix B — Precipitation Data

### Appendix B-1. Comparison of Observed and Normal Precipitation (NRCS 2015)

Monthly precipitation data for Pullman, Washington.

<table>
<thead>
<tr>
<th>Long-term rainfall records&lt;sup&gt;a&lt;/sup&gt;</th>
<th>3 yrs. in 10 less than</th>
<th>Average</th>
<th>3 yrs. in 10 more than</th>
<th>Rainfall&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Condition dry, wet, normal&lt;sup&gt;b&lt;/sup&gt;</th>
<th>Condition Value</th>
<th>Month weight value</th>
<th>Product of previous two columns</th>
</tr>
</thead>
<tbody>
<tr>
<td>1&lt;sup&gt;st&lt;/sup&gt; prior month</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mar</td>
<td>1.40</td>
<td>1.99</td>
<td>2.35</td>
<td>1.44</td>
<td>N</td>
<td>2</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>2&lt;sup&gt;nd&lt;/sup&gt; prior month</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feb</td>
<td>1.37</td>
<td>2.10</td>
<td>2.53</td>
<td>2.22</td>
<td>N</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>3&lt;sup&gt;rd&lt;/sup&gt; prior month</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jan</td>
<td>1.71</td>
<td>2.46</td>
<td>2.93</td>
<td>2.19</td>
<td>N</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Sum</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>12</td>
</tr>
</tbody>
</table>

<sup>a</sup>NRCS 2019

<sup>b</sup>Conditions are considered normal if they fall within the low and high range around the average.

Note: If sum is
- 6 - 9 then prior period has been drier than normal
- 10 - 14 then period has been normal
- 15 - 18 then period has been wetter than normal

<table>
<thead>
<tr>
<th>Condition value:</th>
<th>Dry (D)</th>
<th>Normal (N)</th>
<th>Wet (W)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 - 9</td>
<td>=1</td>
<td>=2</td>
<td>=3</td>
</tr>
</tbody>
</table>

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

Daily precipitation data for Pullman, Washington.

<table>
<thead>
<tr>
<th>Date (2018)</th>
<th>Daily Precipitation (inches)(^a)</th>
</tr>
</thead>
<tbody>
<tr>
<td>April 23</td>
<td>0.00</td>
</tr>
<tr>
<td>April 22</td>
<td>0.00</td>
</tr>
<tr>
<td>April 21</td>
<td>0.00</td>
</tr>
<tr>
<td>April 20</td>
<td>0.00</td>
</tr>
<tr>
<td>April 19</td>
<td>0.00</td>
</tr>
<tr>
<td>April 18</td>
<td>T</td>
</tr>
<tr>
<td>April 17</td>
<td>T</td>
</tr>
<tr>
<td>April 16</td>
<td>0.28</td>
</tr>
<tr>
<td>April 15</td>
<td>0.15</td>
</tr>
<tr>
<td>April 14</td>
<td>0.03</td>
</tr>
<tr>
<td><strong>Sum</strong></td>
<td><strong>0.46</strong></td>
</tr>
</tbody>
</table>

\(^a\) NRCS 2019

"T" values indicate a TRACE value was recorded.

Conclusions: Moderate precipitation was recorded in the ten days preceding field work.


Literature Cited


