

SR 20 Gages Slough Mitigation Site

SR 20 Fredonia to I-5 (WIN: A02039B) - IP NWS-2005-1406
Mt. Vernon Rail Siding Upgrade Project - NWP (23) NWS-2007-236

Northwest Region

2014 MONITORING REPORT

Wetlands Program

Issued March 2015



**Washington State
Department of Transportation**

Environmental Services Office

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SR 20 Gages Slough Mitigation Site

SR 20 Fredonia to I-5 (WIN #A02039B) - IP NWS-2005-1406

Mt. Vernon Rail Siding Upgrade Project - NWP (23) NWS-2007-236



General Site Information		
USACE Permit Numbers	IP NWS-2005-1406 NWP (23) NWS-2007-236	
Mitigation Location	North of West McCorquedale Road, east and south of Gages Slough in Skagit County	
LLID Number	122354048451	
Construction Date	2009	
Monitoring Period	2010-2019	
Year of Monitoring	5 of 10	
Area of Project Impact¹	6.7 acres	
Type of Mitigation	Wetland Establishment	Wetland Enhancement
Planned Area of Mitigation	9.86 acres	0.95 acre

¹ The project impacts include 5.95 acres from the SR 20 Fredonia to I-5 Project (NWS-2005-1406-SOD) (reduced from the original 6.28 acres in a permit modification dated 5/22/2008) and 0.75 acre from the Mt. Vernon Rail Siding Upgrade Project (NWS-2007-236-SOD).

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Summary of Monitoring Results and Management Activities (2014)

Performance Standards	2014 Results ²	Management Activities
Wetland hydrology will be present in intended wetland areas.	Hydrology monitoring discontinued (see delineation results below)	
The mitigation site will contain 9.86 acres of created/re-established wetland and 0.95 acre of enhanced wetland for a total wetland area of 10.81 acres.	11.7 acres total wetland area	
Native facultative or wetter woody species will achieve a minimum of 35 percent coverage in the forested and scrub-shrub wetland communities.	95% cover (visual estimate)	
Native facultative or wetter herbaceous vegetation will achieve a minimum of 60% coverage in the emergent and aquatic bed wetland communities.	Emergent community: 79% cover (CI _{80%} = 75-82%) Aquatic bed community: 5% cover (visual estimate)	
No more than 30% cover of targeted invasive species in the wetland. No more than 15% cover of non-native blackberries and English ivy across the site. No Japanese knotweed or purple loosestrife on-site.	Wetland: <1% cover Blackberries and ivy: <1% cover Knotweed and loosestrife: none	Weed control conducted on five dates from February to September, 2014
Native woody species will achieve a minimum of 30 percent coverage in the upland buffer community.	73% cover (CI _{80%} = 68-79%)	
No more than 30% cover of targeted invasive species in the buffer. No more than 15% cover of non-native blackberries and English ivy across the site. No Japanese knotweed or purple loosestrife on-site.	Buffer: <1% cover Blackberries and ivy: <1% cover Knotweed and loosestrife: none	Weed control conducted on five dates from February to September, 2014

Report Introduction

This report summarizes fifth-year (Year-5) monitoring activities at the State Route (SR) 20 Gages Slough 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, photo-documentation, and a wetland delineation. Vegetation monitoring occurred on August 5 and 6, 2014. A wetland delineation was conducted on May 6, 2013.

² Estimated values are presented with their corresponding statistical confidence interval. For example, 79% cover (CI_{80%} = 75-82%) means we are 80% confident that the true cover value is between 75% and 82%.

What is the SR 20 Gages Slough Mitigation Site?

This 14.19-acre mitigation site (Figure 1) is a combination of established, re-established and enhancement wetland on West McCorquedale Road, adjacent to Gages Slough, in Burlington, Skagit County. This site was established to compensate for the loss of 6.7 acres of wetlands due to road improvements along SR 20 and the extension of the existing BNSF Railway siding near the southern limit boundary of Mount Vernon. The new channel will mimic Gages Slough in design and will increase water quality, amphibian habitat, and flood flow storage and alteration functions already present.

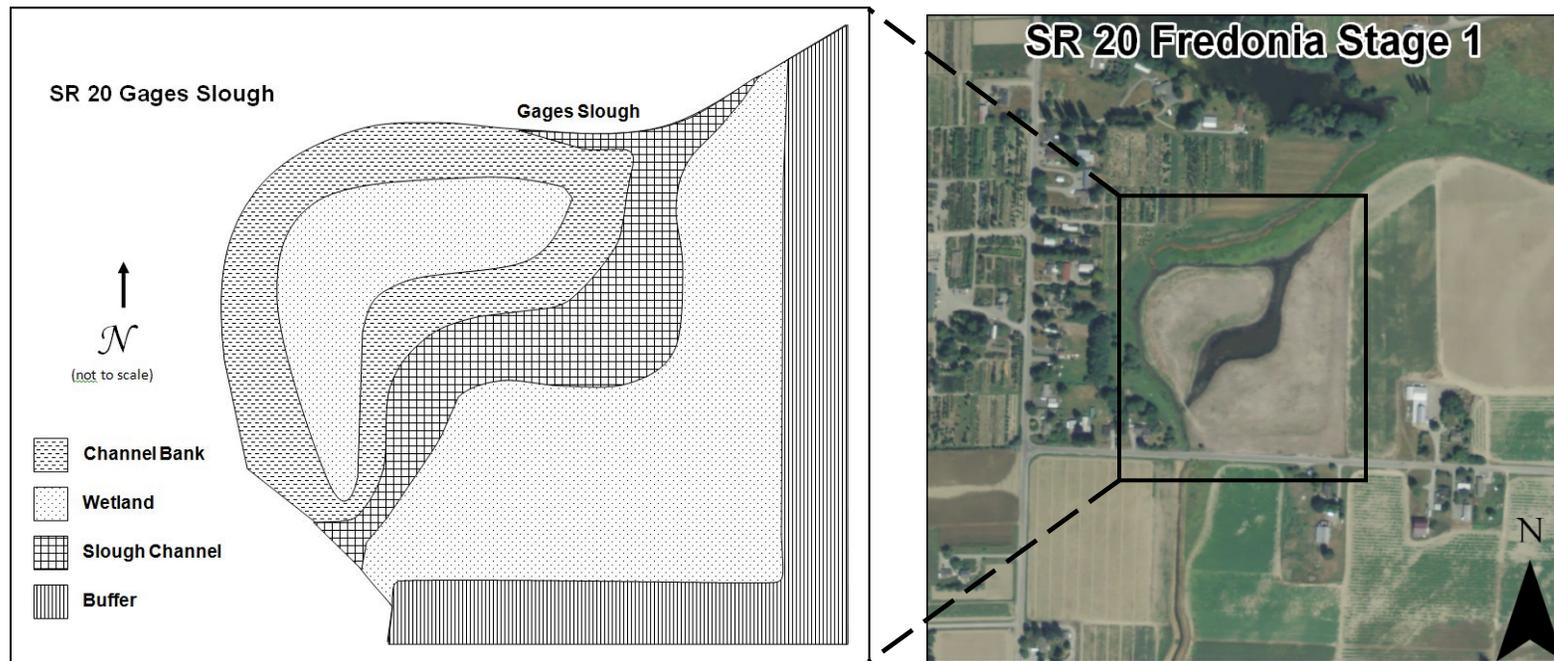


Figure 1 Site Sketch

The SR 20 Gages Slough Mitigation Site contains an aquatic bed channel edged by an emergent community, surrounded by scrub-shrub and forested wetland communities, and with upland buffer bordering the south and east sides. Appendix 2 includes site directions.

What are the performance standards for this site?

Year 5

Performance Standard 1

The soils will be saturated to the surface, or standing water will be present in a monitoring well at 12 inches below the surface or less, for a consecutive number of days greater than or equal to 10% of the growing season in years when rainfall meets or exceeds the 30-year average.

Performance Standard 2

The wetland areas will be delineated using current methods. The mitigation site will contain 9.86 acres of created/re-established wetland and 0.95 acre of enhanced wetland for a total wetland area of 10.81 acres.

Performance Standard 3

Native facultative or wetter woody species will achieve a minimum of 35 percent coverage in the forested and scrub-shrub wetland communities. Native colonizing vegetation will be included in these coverage calculations.

Performance Standard 4

Native facultative or wetter herbaceous vegetation will achieve a minimum of 60% coverage in the emergent and aquatic bed wetland communities. Native colonizing vegetation will be included in these coverage calculations.

Performance Standard 5

No more than thirty percent cover by non-native invasive species as listed in Table 7 [see Appendix 3, Table 1] across the wetland creation/re-establishment and enhancement areas except:

- 15% maximum cover across the entire mitigation site for blackberry (*Rubus laciniatus* and *R. armeniacus*) and English Ivy (*Hedera helix*).
- The presence of Japanese knotweed (*Polygonum cuspidatum* and related species) and purple loosestrife (*Lythrum salicaria*) will initiate eradication measures.

Performance Standard 6

Native woody species will achieve a minimum of 30 percent coverage in the upland buffer community. Native colonizing vegetation will be included in this coverage calculation.

Performance Standard 7

No more than thirty percent cover by non-native invasive species as listed in Table 7 [see Appendix 3, Table 1] in the buffer areas except:

- 15% maximum cover across the entire mitigation site for blackberry (*Rubus laciniatus* and *R. armeniacus*) and English Ivy (*Hedera helix*).
- The presence of Japanese knotweed (*Polygonum cuspidatum* and related species) and purple loosestrife (*Lythrum salicaria*) will initiate eradication measures.

Year 10

Performance Standard 8

Native woody species will achieve a minimum of 50 percent coverage in the upland buffer community. Native colonizing vegetation will be included in this coverage calculation.

Appendix 1 shows the as-built planting plan (WSDOT 2008).

How were the performance standards evaluated?

To assess vegetation standards, two separate baselines were established, each in two segments. Temporary sampling transects were placed perpendicular to each baseline using a systematic random sampling method (Figure 2). In the buffer, a 448-meter baseline was established in two segments along the southern and eastern borders of the site. The line-intercept method was used to estimate native woody cover in this zone (Performance Standards 6 and 8). Twenty-three 10-meter-long line-segment sample units were randomly positioned along the transects. In the emergent wetland, a 546-meter baseline was established in two segments following the curve of the banks. The point-line method was used to estimate the cover of native facultative or wetter herbaceous vegetation in this zone (Performance Standard 4). Twenty-seven four-meter-long sample units (20 points each) were randomly positioned along the transects.

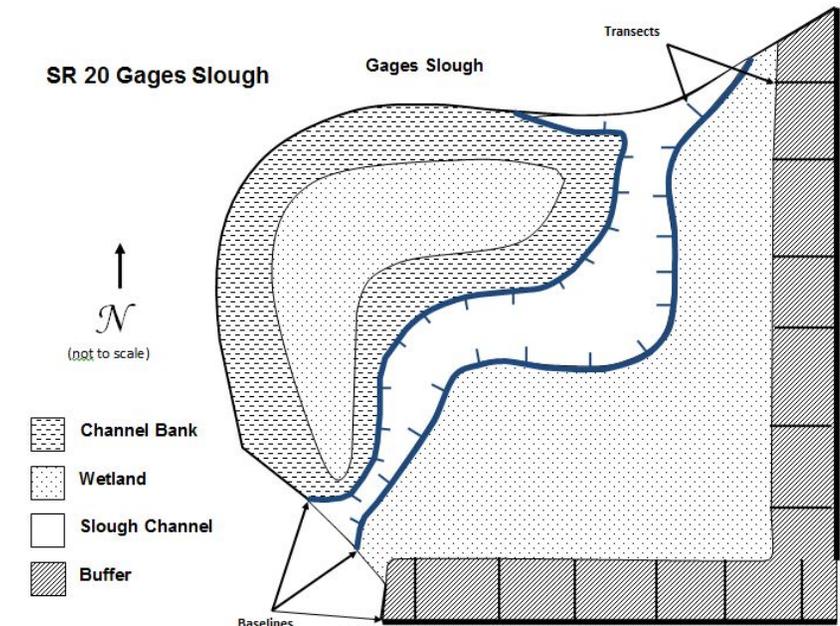


Figure 2 Site Sampling Design (2014)

Visual estimates were used to assess the cover of native facultative or wetter herbaceous vegetation in the aquatic bed community (Performance Standard 4), and the cover of invasive species in all communities (Performance Standards 5 and 7). Sampling was not practical in the aquatic bed community due to the depth of inundation (deeper than hip waders in much of the area). Sampling was not conducted for invasive species because of the obviously very low cover of applicable species on-site.

WSDOT staff performed a wetland delineation using methods described in the Corps of Engineers Wetlands Delineation Manual (Environmental Laboratory 1987), the 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 Standard 2).

For additional details on the methods, see the [WSDOT Wetland Mitigation Site Monitoring Methods Paper](#) (WSDOT 2008).

How is the site developing?

The site has developed rapidly and first met the final-year performance standard for wetland woody cover in 2012. On April 23, 2014 a request to discontinue quantitative sampling for wetland woody cover was sent to the USACE and the Department of Ecology. This request was accepted on May 22, 2014. This final-year standard is still currently being met. Additionally, the final-year performance standard for buffer woody cover (Performance Standard 8) was met in 2013 (by visual estimate) and 2014 (by quantitative sampling).

A wetland delineation was conducted on May 6, 2013 and the final-year wetland acreage requirements have been met. A delineation report is included in Appendix 4 of this report. On February 20, 2014 a request to discontinue hydrology monitoring was sent to the USACE and the Department of Ecology. This request was accepted on February 20, 2014.

All current (Year-5) performance standards have been achieved with the exception of cover in the aquatic bed community. The same is true of the final-year performance standards with the possible additional exception of cover in the emergent wetland community, where cover this year was estimated at one percent below the final-year target of 80 percent.

The aquatic bed community has developed at a much slower pace than the rest of the site. The dominant plant species in this community is Rocky Mountain pond-lily (*Nuphar polysepala*). Although the cover of this species has clearly increased over the last several years, from almost nothing in 2010 to roughly three percent in 2014, its spread has been slow and is so far limited to the shallowest portions of this area. The dominant organism in this community is a submersed plant-like macroalga called muskgrass (*Chara sp.*, see Photo 1) which provides about 75 percent cover. Since this species is technically not a plant, it was not included in cover estimates for this zone in 2014. The cover of these algae may have been mixed up with submersed aquatic plant species in this community in previous cover estimates, however, confusing the documentation of plant community development. It is also possible that these algae have displaced some of the cover of submersed aquatic plant species in this community, such as coon's-tail (*Ceratophyllum demersum*).

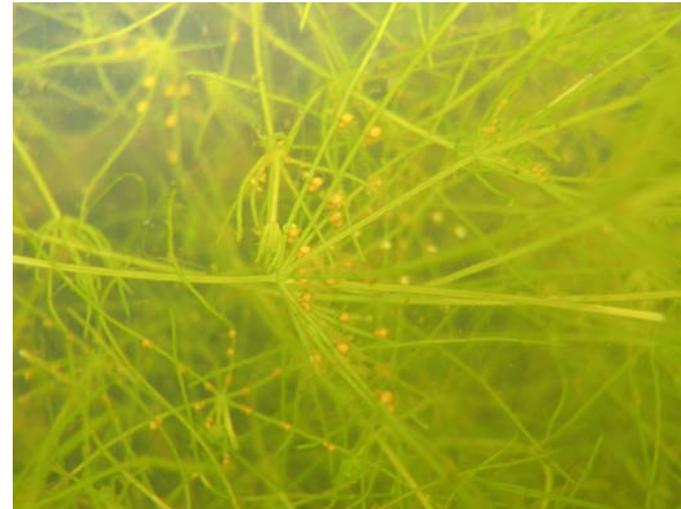


Photo 1
Muskgrass (*Chara sp.*) in the aquatic bed community
(August 2014)

Results for Performance Standard 1
(Wetland hydrology present):

Based on the 2013 delineation (see results for Performance Standard 2 below), a request to discontinue hydrology monitoring at this site was sent to and accepted by the USACE and the Department of Ecology in February of 2014.

Results for Performance Standard 2
(9.86 acres of created/re-established wetland and 0.95 acre of enhanced wetland for a total wetland area of 10.81 acres):

A wetland delineation was conducted by WSDOT Wetlands Program staff on May 6, 2013 (see Appendix 4 for the full delineation report). The delineation identified 11.7 acres of wetland within the mitigation site boundaries, exceeding the performance standard requirement of 10.81 acres. Since this included all of the intended wetland areas on-site, in addition to a small portion of the intended upland buffer in the northeast corner of the site, it can be assumed that the specific acreage requirements for created/re-established and enhanced wetlands were also met.

Results for Performance Standard 3
(35% cover of native FAC or wetter woody species in the forested and scrub-shrub wetland communities):

Based on monitoring results in 2012 and 2013, a request to discontinue quantitative sampling for wetland woody cover was sent to and accepted by the USACE and the Department of Ecology in the spring of 2014. The cover of native facultative or wetter woody species in the forested and scrub-shrub wetland communities (Photo 2) continues to exceed the final-year performance standard and was visually estimated at 95 percent in 2014.



Photo 2
Woody cover in the scrub-shrub wetland (August 2014)

Results for Performance Standard 4

(60% cover of native FAC or wetter herbaceous vegetation in the emergent and aquatic bed wetland communities):

The cover of native facultative or wetter herbaceous vegetation in the emergent community (Photo 3) is estimated at 79% (CI_{80%} = 75-82%). This exceeds the current-year performance standard, and essentially equals the final-year performance standard of 80 percent. The dominant species in this zone are swamp smartweed (*Persicaria hydropiperoides*), soft-stem bulrush (*Schoenoplectus tabernaemontani*), rice cutgrass (*Leersia oryzoides*), and broadleaf cattail (*Typha latifolia*).

The cover of native facultative or wetter herbaceous vegetation in the aquatic bed community (Photo 4) was visually estimated at five percent. This cover consists primarily of Rocky Mountain pond-lily (*Nuphar polysepala*), along with some coon's-tail (*Ceratophyllum demersum*), floating-leaved pondweed (*Potamogeton natans*), and common duckweed (*Lemna minor*). In addition, there is a submersed plant-like macroalga called muskgrass (*Chara sp.*, see Photo 1) that provides about 75 percent cover in this area. Since this species is technically not a plant, it was not included in the overall cover estimate (see additional comments in the “How is the site developing?” section above).



**Photo 3
Herbaceous cover in the emergent wetland
(August 2014)**



**Photo 4
Herbaceous cover in the aquatic bed community
(August 2014)**

Results for Performance Standard 5

(No more than 30% cover of targeted invasive species in the wetland; No more than 15% cover of non-native blackberries and English ivy across the site; No Japanese knotweed or purple loosestrife on-site):

The cover of targeted invasive species (Appendix 3, Table 1) in the wetland was visually estimated at less than one percent. The applicable species observed in this zone were reed canarygrass (*Phalaris arundinacea*), Himalayan blackberry (*Rubus armeniacus*), paleyellow iris (*Iris pseudacorus*), and climbing nightshade (*Solanum dulcamara*). The cover of non-native blackberry species across the site was also visually estimated at less than one percent. English ivy, Japanese knotweed, and purple loosestrife were not observed on-site.



Photo 5
Woody cover in the buffer (August 2014)

Results for Performance Standards 6 and 8

(30% cover [50% in Year 10] of native woody species in the upland buffer):

The cover of native woody species in the buffer (Photo 5) is estimated at 73% ($CI_{80\%} = 68-79\%$). The dominant species in this zone are Nootka rose (*Rosa nutkana*), snowberry (*Symphoricarpos albus*), and beaked hazelnut (*Corylus cornuta*). The cover is denser in the eastern portion of the buffer than in the southern portion, presumably due to fertilizer-laden runoff from the adjacent farm.

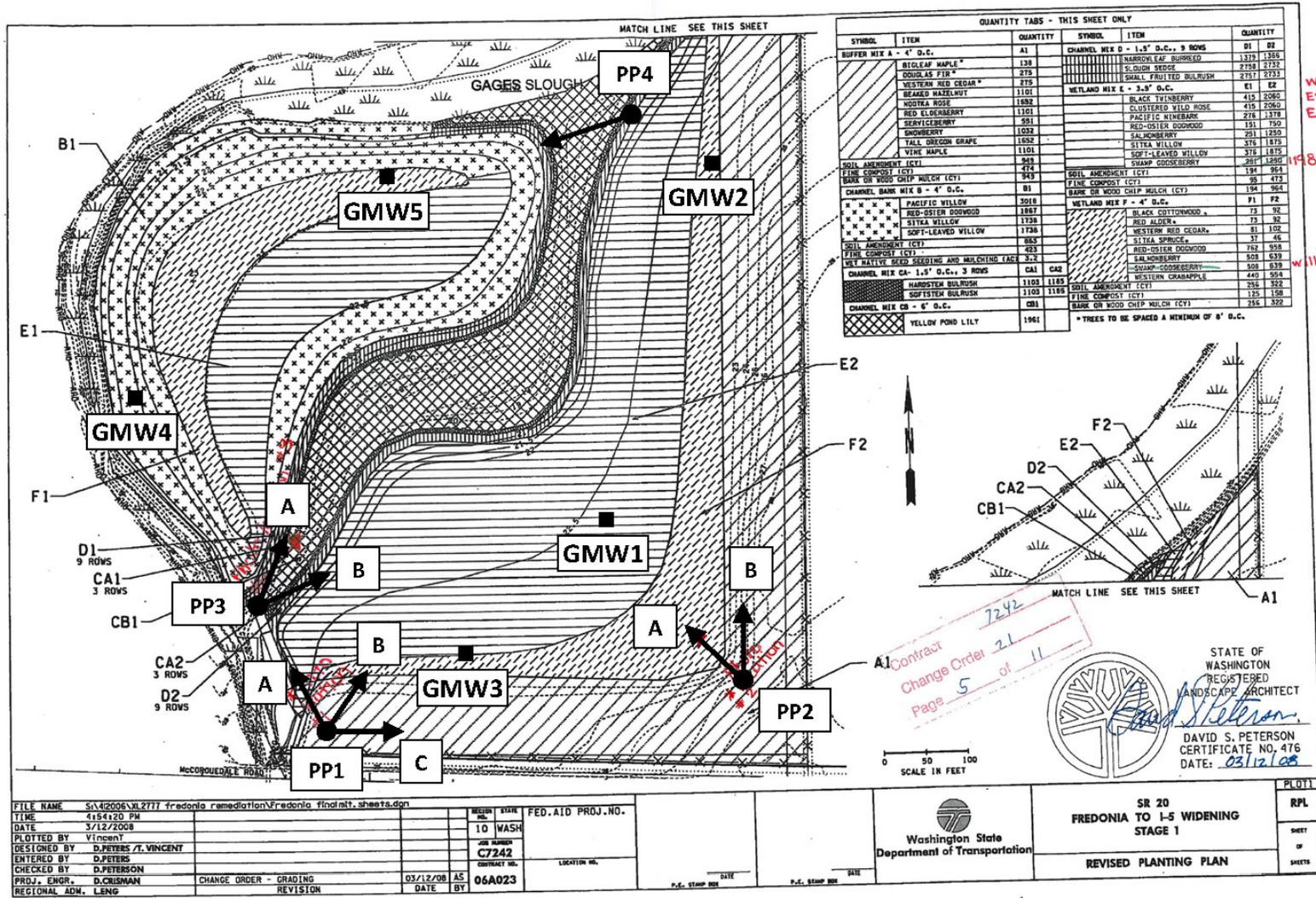
Results for Performance Standard 7

(No more than 30% cover of targeted invasive species in the buffer; No more than 15% cover of non-native blackberries and English ivy across the site; No Japanese knotweed or purple loosestrife on-site):

The cover of targeted invasive species (Appendix 3, Table 1) in the buffer was visually estimated at less than one percent. The applicable species observed in this zone were reed canarygrass (*Phalaris arundinacea*) and Himalayan blackberry (*Rubus armeniacus*). The cover of non-native blackberry species across the site was also visually estimated at less than one percent. English ivy, Japanese knotweed, and purple loosestrife were not observed on-site.

Appendix 1 – As-built Planting Plan with Photo Point and Groundwater Monitoring Well Locations

(from WSDOT 2008)



Appendix 2 – Photo Points

The photographs below were taken from permanent photo-points on August 5, 2014 and document current site development.



Photo Point 1a



Photo Point 1b



Photo Point 1c



Photo Point 2a



Photo Point 2b



Photo Point 3a



Photo Point 3b



Photo Point 4

Driving Directions:

Take Interstate 5 toward Mount Vernon. Take exit 229. Turn west onto George Hopper Road. Take the first right onto Bouslog Road then the first left onto W McCorquedale Road. The site will be on your right after about a quarter of a mile.

Appendix 3 – Data Tables

Table 1. Non-native invasive species.

Scientific Name	Common Name
<i>Buddleia alternifolia</i>	fountain butterfly bush
<i>Cirsium arvense</i>	Canada thistle
<i>Convolvulus spp.</i>	Morning-glory/bindweed species
<i>Cytisus scoparius</i>	Scot's broom
<i>Geranium robertianum</i>	herb robert
<i>Hedera helix</i>	English ivy
<i>Ilex aquifolium</i>	English holly
<i>Iris pseudacorus</i>	yellow flag iris
<i>Lythrum salicaria</i>	purple loosestrife
<i>Phalaris arundinacea</i>	reed canarygrass
<i>Polygonum cuspidatum (and related species and hybrids)</i>	Japanese knotweed
<i>Prunus laurocerasus</i>	English laurel
<i>Rubus laciniatus</i>	evergreen blackberry
<i>Rubus armeniacus (discolor)</i>	Himalaya or Armenian blackberry
<i>Solanum dulcamara</i>	Bitter nightshade

Appendix 4 – Wetland Delineation Report

WETLAND DELINEATION REPORT

SR 20 Gages Slough Mitigation Site

SR 20 Fredonia to I-5 (MP 54.44 to MP 59.75)
USACE Permit NWS-2005-01406-SOD
Ecology Water Quality Certification Order 3860

Mt. Vernon Rail Siding Upgrade Project
USACE (NPW 23) NWS-2007-236-SOD
Ecology Water Quality Certification Order 4256

Skagit County, Washington

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

February 5, 2014



Washington State
Department of Transportation

Introduction

This report was prepared by the Washington State Department of Transportation (WSDOT) to describe the wetland boundary delineation for the SR 20 Gages Slough mitigation site. Field work was conducted by WSDOT wetland biologists Tatiana Dreisbach and Tom Mohagen, on April 22, 2013. The delineation identifies 11.7 acres of wetland within the mitigation site boundaries including 11.1 acres palustrine emergent (PEM) and scrub-shrub (PSS) wetland and 0.6 acre of palustrine aquatic bed (PAB) and open water (POW) wetland.

General Information for the SR 20 Gages Slough mitigation site		
Location:	S7, T34N, R4XE. Skagit County. (Vicinity map, Figure 1)	
	USACE Permit Number	NWS-2005-1406-SOD
	USACE NWP 23 Number	NWS-2007-236-SOD
	Long./Lat. ID Number	122354048451
	Land Resource Region (LRR)	A
	Major Land Resource Area (MLRA)	2
	Construction Date	2009
	Monitoring Period	2010-2019
	Year of Monitoring	4 of 10 (in 2013)
Area of Project Impact¹	6.7 acres	
Type of Mitigation	Intended Area (acres)	
Establishment/ Restoration	9.86	
Enhancement	0.95	
Total Intended Wetland Mitigation Area²	10.81 acres	
Total Delineated Wetland Area	11.7 acres (11.1 acres PEM/PSS, 0.6 acre PAB/POW)	

¹ Project impact numbers from USACE Nationwide Permit NWS-2005-1406-SOD modification with 5.95 acres of impacts (USACE 2008) and USACE Permit NWS-2007-236-SOD with 0.75 acre of impacts (USACE 2007).

² Area of mitigation from the *Final Wetland Mitigation Report SR 20 Fredonia to I-5 (MP 54.44 to MP 59.75)* (WSDOT 2006) and *Wetland Mitigation Report Mt Vernon Rail Siding Upgrade Project* (WSDOT 2007).

Location

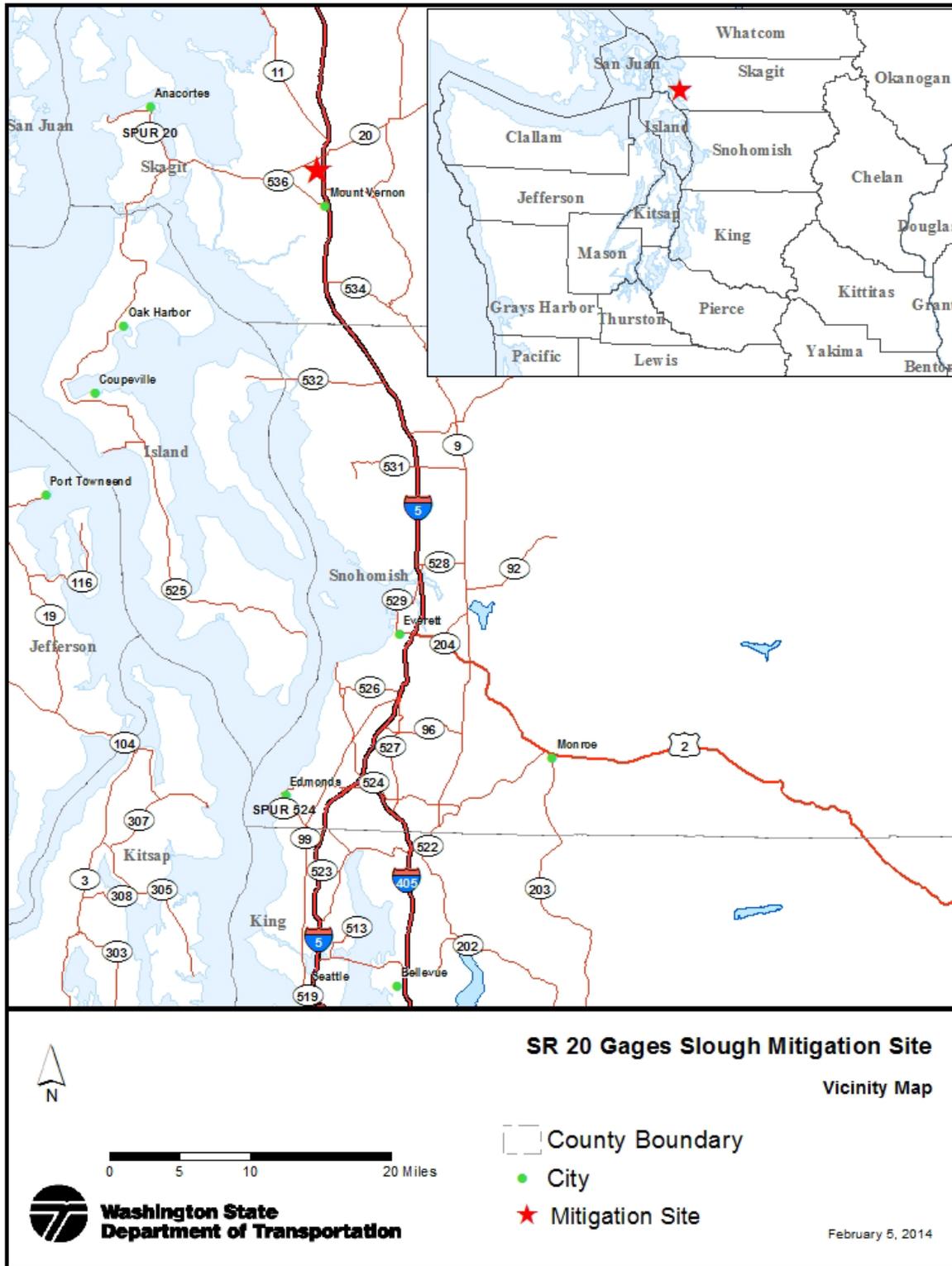


Figure 1. Vicinity Map

Methods

Wetland boundaries within the SR 20 Gages Slough mitigation site 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 the wetland boundaries and sampling point locations (Figure 2). 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 wetland mitigation site boundary (Figure 2).

Wetlands

Delineation data were collected at four 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. The delineation determined 11.7 acres of wetland were present within the SR 20 Gages Slough mitigation site, with 11.1 acres PEM /PSS wetland, and 0.6 acre of PAB/POW wetland.

Precipitation

The Regional Delineation Supplement Version 2.0 (USACE 2010) recommends using methods described in Chapter 19 in *Engineering Field Handbook* (NRCS 1997) 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. One of the three months prior to field work was within the normal range, with the first prior month wetter than normal, the second prior month normal, and the third prior month drier than normal. When considering the three prior months as whole, normal precipitation conditions were present prior to field work (Appendix B-1).

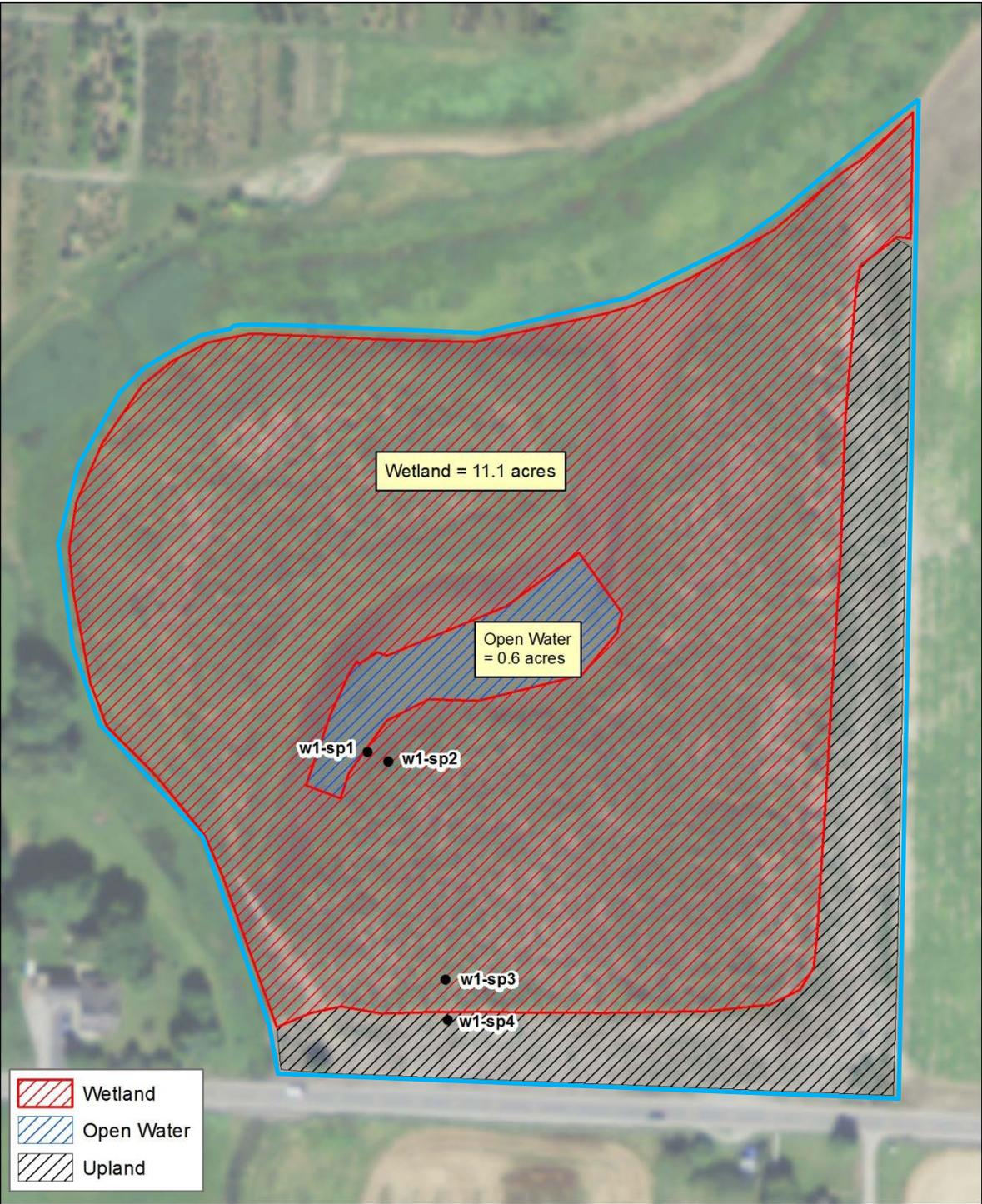
Light precipitation was recorded in the ten days preceding field work (Appendix B-2).

Growing Season

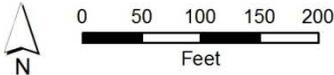
The following evidence of the growing season was observed at the time of the delineation:

- new vegetative growth was present on herbaceous vegetation
- leaves on woody species were fully emerged.

GPS Data - SR 20 Gages Slough, 5/6/2013



2011 Digital Orthophoto from USDA NAIP.



6/10/2013

Figure 2. Study area in blue, wetland boundary in red, and sampling point locations in black.

SR 20 Gages Slough Mitigation Site – Wetland Delineation Summary		
Total Delineated Wetland Area	11.7 acres (11.1 PEM/PSS, 0.6 PAB/POW)	
	Wetland Determination Data Form(s)	Appendix A; Sampling Point W1-SP1, W1-SP2, W1-SP3
	Upland Determination Data Form(s)	Appendix A; Sampling Point W1-SP4
	Delineator(s)	Tatiana Dreisbach, Tom Mohagen
	Delineation Date	May 6, 2013
Vegetation	Trees – Shrubs – Sitka willow (<i>Salix sitchensis</i>), willows (<i>Salix sp.</i>), Nootka rose (<i>Rosa nutkana</i>), redosier dogwood (<i>Cornus alba</i>), twinberry honeysuckle (<i>Lonicera involucrata</i>) Herbs – marshpepper knotweed (<i>Persicaria hydropiper</i>), <i>Myrophyllum sp.</i> (watermilfoil), Rocky Mountain pond-lily (<i>Nuphar lutea</i>), broadleaf cattail (<i>Typha latifolia</i>), slough sedge (<i>Carex obnupta</i>), common spikerush (<i>Eleocharis palustris</i>), soft-stem bulrush (<i>Schoenoplectus tabernaemontani</i>), spike bentgrass (<i>Agrostis exarata</i>), soft rush (<i>Juncus effusus</i>),	
Soils	Soils examined to a depth of 20 inches exhibited hydric characteristics. Matrix colors of 10YR 2/1, 10YR 4/1, 10Y 5/1, 5Y 4/1 were observed. Redoximorphic concentrations were observed in some layers. Indicators Depleted Below Dark Surface (A11) and Depleted Matrix (F3) met.	
Hydrology	Primary source of hydrology is a high groundwater table associated with the adjacent Gages Slough as well as landscape position in the greater Skagit River floodplain. Water in the observation pits did not seem to be a helpful indicator of wetland hydrology. Fine silt loam soils are present. This soil texture likely limits free water movement. This observation based on sample point w1-sp2 which was taken 6 inches up slope of standing water and a water table was not observed in pit dug to 16 inches. Surface water in the POW and some PAB locations was greater than 20 inches deep.	
Rationale for Delineation	Positive indicators of all three wetland criteria are present. Placement of boundary determined by vegetation and topographic break. Soil and hydrology indicators generally did not inform the delineation. The area is mapped with hydric soils and hydric soils are present in upland areas. Subsurface hydrology indicators did not seem reliable due to fine textures soils limiting free water movement.	

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.

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Appendix A —Wetland Determination Data Form

Wetland Delineation Data Forms for:

W1-SP1

W1-SP2

W1-SP3

W1-SP4

Wetland polygons, sampling point locations, and wetland names shown in Figure 2.

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

Project/Site: SR 20 Gages Slough City/County: n/a/Skagit Sampling Date: 06-May-13
 Applicant/Owner: wsdot State: wa Sampling Point: w1-sp1
 Investigator(s): Tom Mohagen, Tatiana Dreisbach Section, Township, Range: S 7 T 34N R 4E
 Landform (hillslope, terrace, etc.): slough Local relief (concave, convex, none): concave Slope: 2.0 % / 1.1 °
 Subregion (LRR): LRR A Lat.: 48.455 Long.: -122.354 Datum: NAD83HARN
 Soil Map Unit Name: Sumas silt loam NWI classification: pab

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 <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="radio"/> No <input type="radio"/>
Remarks:	

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Rel.Strat. Cover	Indicator Status	
Tree Stratum (Plot size: <u>10 x 10 feet</u>)				
1. _____	_____	<input type="checkbox"/> 0.0%	_____	Dominance Test worksheet: Number of Dominant Species That are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)
2. _____	_____	<input type="checkbox"/> 0.0%	_____	
3. _____	_____	<input type="checkbox"/> 0.0%	_____	
4. _____	_____	<input type="checkbox"/> 0.0%	_____	
	0	= Total Cover		
Sapling/Shrub Stratum (Plot size: <u>10 x 10 feet</u>)				
1. _____	_____	<input type="checkbox"/> 0.0%	_____	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species <u>90</u> x 1 = <u>90</u> FACW species <u>0</u> x 2 = <u>0</u> FAC species <u>0</u> x 3 = <u>0</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>0</u> x 5 = <u>0</u> Column Total s: <u>90</u> (A) <u>90</u> (B) Prevalence Index = B/A = <u>1.000</u>
2. _____	_____	<input type="checkbox"/> 0.0%	_____	
3. _____	_____	<input type="checkbox"/> 0.0%	_____	
4. _____	_____	<input type="checkbox"/> 0.0%	_____	
5. _____	_____	<input type="checkbox"/> 0.0%	_____	
	0	= Total Cover		
Herb Stratum (Plot size: <u>5 x 5 feet</u>)				
1. <u>Persicaria hydropiper</u>	40	<input checked="" type="checkbox"/> 44.4%	OBL	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrologic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is > 50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u>Myrophyllum sp.</u>	40	<input checked="" type="checkbox"/> 44.4%	OBL	
3. <u>Nuphar lutea</u>	10	<input type="checkbox"/> 11.1%	OBL	
4. _____	0	<input type="checkbox"/> 0.0%	_____	
5. _____	0	<input type="checkbox"/> 0.0%	_____	
6. _____	0	<input type="checkbox"/> 0.0%	_____	
7. _____	0	<input type="checkbox"/> 0.0%	_____	
8. _____	0	<input type="checkbox"/> 0.0%	_____	
9. _____	0	<input type="checkbox"/> 0.0%	_____	
10. _____	0	<input type="checkbox"/> 0.0%	_____	
11. _____	0	<input type="checkbox"/> 0.0%	_____	
	90	= Total Cover		
Woody Vine Stratum (Plot size: <u>5 x 5 feet</u>)				
1. _____	_____	<input type="checkbox"/> 0.0%	_____	Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/>
2. _____	_____	<input type="checkbox"/> 0.0%	_____	
	0	= Total Cover		
% Bare Ground in Herb Stratum: <u>10</u>				

Remarks:

¹Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: w1-sp1

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

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.)		Indicators for Problematic Hydric Soils³:
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except in MLRA 1)	<input checked="" type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Sandy Muck Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox depressions (F8)	

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:
 Permanent inundation. Pit not dug. Meets definition of a hydric soil due to permanent inundation.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (minimum of two required)
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Drift deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input checked="" type="checkbox"/> FAC-neutral Test (D5)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost Heave Hummocks (D7)
<input checked="" type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		

Field Observations:

Surface Water Present?	Yes <input checked="" type="radio"/> No <input type="radio"/>	Depth (inches): <input type="text" value="20"/>	Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>
Water Table Present?	Yes <input checked="" type="radio"/> No <input type="radio"/>	Depth (inches): <input type="text" value="0"/>	
Saturation Present? (includes capillary fringe)	Yes <input checked="" type="radio"/> No <input type="radio"/>	Depth (inches): <input type="text" value="0"/>	

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

Remarks:

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

Project/Site: SR 20 Gages Slough City/County: n/a/Skagit Sampling Date: 06-May-13
 Applicant/Owner: wsdot State: wa Sampling Point: w1-sp2
 Investigator(s): Tom Mohagen, Tatiana Dreisbach Section, Township, Range: S 7 T 34N R 4E
 Landform (hillslope, terrace, etc.): PEM edge of slough Local relief (concave, convex, none): concave Slope: 5.0 % / 2.9 °
 Subregion (LRR): LRR A Lat.: 48.455 Long.: -122.354 Datum: NAD83HARN
 Soil Map Unit Name: Sumas silt 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
 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 <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="radio"/> No <input type="radio"/>
Remarks:	

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Rel.Strat. Cover	Indicator Status	
Tree Stratum (Plot size: <u>10 x 10 feet</u>)				
1. _____	_____	<input type="checkbox"/> 0.0%	_____	Dominance Test worksheet: Number of Dominant Species That are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)
2. _____	_____	<input type="checkbox"/> 0.0%	_____	
3. _____	_____	<input type="checkbox"/> 0.0%	_____	
4. _____	_____	<input type="checkbox"/> 0.0%	_____	
	0	= Total Cover		
Sapling/Shrub Stratum (Plot size: <u>10 x 10 feet</u>)				
1. _____	_____	<input type="checkbox"/> 0.0%	_____	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species <u>74</u> x 1 = <u>74</u> FACW species <u>24</u> x 2 = <u>48</u> FAC species <u>2</u> x 3 = <u>6</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>0</u> x 5 = <u>0</u> Column Total s: <u>100</u> (A) <u>128</u> (B) Prevalence Index = B/A = <u>1.280</u>
2. _____	_____	<input type="checkbox"/> 0.0%	_____	
3. _____	_____	<input type="checkbox"/> 0.0%	_____	
4. _____	_____	<input type="checkbox"/> 0.0%	_____	
5. _____	_____	<input type="checkbox"/> 0.0%	_____	
	0	= Total Cover		
Herb Stratum (Plot size: <u>5 x 5 feet</u>)				
1. <u>Typha latifolia</u>	30	<input checked="" type="checkbox"/> 30.0%	OBL	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrologic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is > 50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u>Carex obnupta</u>	20	<input checked="" type="checkbox"/> 20.0%	OBL	
3. <u>Eleocharis palustris</u>	10	<input type="checkbox"/> 10.0%	OBL	
4. <u>Schoenoplectus tabernaemontani</u>	10	<input type="checkbox"/> 10.0%	OBL	
5. <u>Juncus effusus</u>	5	<input type="checkbox"/> 5.0%	FACW	
6. <u>Persicaria hydropiper</u>	2	<input type="checkbox"/> 2.0%	OBL	
7. <u>Agrostis exarata</u>	15	<input checked="" type="checkbox"/> 15.0%	FACW	
8. <u>Veronica americana</u>	2	<input type="checkbox"/> 2.0%	OBL	
9. <u>Phalaris arundinacea</u>	2	<input type="checkbox"/> 2.0%	FACW	
10. <u>Lotus corniculatus</u>	2	<input type="checkbox"/> 2.0%	FAC	
11. <u>Equisetum telmateia</u>	2	<input type="checkbox"/> 2.0%	FACW	
	100	= Total Cover		
Woody Vine Stratum (Plot size: <u>5 x 5 feet</u>)				
1. _____	_____	<input type="checkbox"/> 0.0%	_____	Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/>
2. _____	_____	<input type="checkbox"/> 0.0%	_____	
	0	= Total Cover		
% Bare Ground in Herb Stratum: <u>0</u>				
Remarks:				

¹Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: W1-sp2

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

Depth (inches)	Matrix			Redox Features				Texture	Remarks
	Color (moist)		%	Color (moist)		%	Type ¹		
0-5	10Y	5/1	80	2.5Y	5/4	20	C	M/PL	Sandy Loam concentration prominent
5-16	10YR	2/1	100						Silt Loam lots of organics and undecomposed roots

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.)		Indicators for Problematic Hydric Soils³:
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except in MLRA 1)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Sandy Muck Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox depressions (F8)	

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:

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Drift deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input checked="" type="checkbox"/> FAC-neutral Test (D5)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost Heave Hummocks (D7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		

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, monitor well, aerial photos, previous inspections), if available:

Remarks:

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

Project/Site: SR 20 Gages Slough City/County: n/a/Skagit Sampling Date: 06-May-13
 Applicant/Owner: wsdot State: wa Sampling Point: w1-sp3
 Investigator(s): Tom Mohagen, Tatiana Dreisbach Section, Township, Range: S 7 T 34N R 4E
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope: 5.0 % / 2.9 °
 Subregion (LRR): LRR A Lat.: 48.454 Long.: -122.354 Datum: NAD83HARN
 Soil Map Unit Name: Sumas 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 <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="radio"/> No <input type="radio"/>
Remarks:	

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Rel.Strat. Cover	Indicator Status	Dominance Test worksheet:
Tree Stratum (Plot size: <u>15 x 15 feet</u>)				Number of Dominant Species That are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of dominant Species That Are OBL, FACW, or FAC: <u>40.0%</u> (A/B)
1. _____	_____	<input type="checkbox"/> 0.0%	_____	
2. _____	_____	<input type="checkbox"/> 0.0%	_____	
3. _____	_____	<input type="checkbox"/> 0.0%	_____	
4. _____	_____	<input type="checkbox"/> 0.0%	_____	
0 = Total Cover				
Sapling/Shrub Stratum (Plot size: <u>15 x 15 feet</u>)				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>55</u> x 2 = <u>110</u> FAC species <u>15</u> x 3 = <u>45</u> FACU species <u>5</u> x 4 = <u>20</u> UPL species <u>5</u> x 5 = <u>25</u> Column Totals: <u>80</u> (A) <u>200</u> (B) Prevalence Index = B/A = <u>2.500</u>
1. <u>Salix sitchensis</u>	50	<input checked="" type="checkbox"/> 58.8%	FACW	
2. <u>Salix sp.</u>	20	<input checked="" type="checkbox"/> 23.5%	_____	
3. <u>Rosa nutkana</u>	5	<input type="checkbox"/> 5.9%	FAC	
4. <u>Cornus alba</u>	5	<input type="checkbox"/> 5.9%	FACW	
5. <u>Lonicera involucrata</u>	5	<input type="checkbox"/> 5.9%	FAC	
85 = Total Cover				
Herb Stratum (Plot size: <u>5 x 5'</u>)				
1. <u>Geranium molle</u>	5	<input checked="" type="checkbox"/> 33.3%	UPL	
2. <u>Trifolium pratense</u>	5	<input checked="" type="checkbox"/> 33.3%	FACU	
3. <u>Agrostis capillaris</u>	5	<input checked="" type="checkbox"/> 33.3%	FAC	
4. _____	0	<input type="checkbox"/> 0.0%	_____	
5. _____	0	<input type="checkbox"/> 0.0%	_____	
6. _____	0	<input type="checkbox"/> 0.0%	_____	
7. _____	0	<input type="checkbox"/> 0.0%	_____	
8. _____	0	<input type="checkbox"/> 0.0%	_____	
9. _____	0	<input type="checkbox"/> 0.0%	_____	
10. _____	0	<input type="checkbox"/> 0.0%	_____	
11. _____	0	<input type="checkbox"/> 0.0%	_____	
15 = Total Cover				
Woody Vine Stratum (Plot size: _____)				
1. _____	_____	<input type="checkbox"/> 0.0%	_____	
2. _____	_____	<input type="checkbox"/> 0.0%	_____	
0 = Total Cover				
% Bare Ground in Herb Stratum: <u>85</u>				
Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrologic Vegetation <input type="checkbox"/> 2 - Dominance Test is > 50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.				
Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/>				
Remarks:				

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: w1-sp3

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks	
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²			
0-1	10YR	2/1	100				Sandy Loam	decomposing mulch	
1-20	5Y	4/1		10YR	5/8	10	C	M/PL	concentration prominent

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.)		Indicators for Problematic Hydric Soils³:
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except in MLRA 1)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input checked="" type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Sandy Muck Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox depressions (F8)	

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:

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Sediment Deposits (B2)	<input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Drift deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> FAC-neutral Test (D5)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost Heave Hummocks (D7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		

Field Observations:

Surface Water Present?	Yes <input type="radio"/> No <input checked="" type="radio"/>	Depth (inches): <input type="text"/>	Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>
Water Table Present?	Yes <input type="radio"/> No <input checked="" type="radio"/>	Depth (inches): <input type="text"/>	
Saturation Present? (includes capillary fringe)	Yes <input type="radio"/> No <input checked="" type="radio"/>	Depth (inches): <input type="text"/>	

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

Remarks:
 Soil only moist however texture likely limits free water movement. This observation based on w1-sp2 which was taken 6 inches up slope of standing water and a water table was not observed in pit dug to 16 inches.

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

Project/Site: SR 20 Gages Slough City/County: skagit Sampling Date: 06-May-13
 Applicant/Owner: wsdot State: wa Sampling Point: w1-sp4
 Investigator(s): Tom Mohagen, tatiana dreisbach Section, Township, Range: S T R
 Landform (hillslope, terrace, etc.): slope Local relief (concave, convex, none): concave Slope: 10.0 % / 5.7 °
 Subregion (LRR): LRR A Lat.: _____ Long.: _____ Datum: NAD83HARN
 Soil Map Unit Name: _____ 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 <input type="radio"/> No <input checked="" type="radio"/> Hydric Soil Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
Remarks: _____	

VEGETATION - Use scientific names of plants.

Stratum	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status	Dominance Test worksheet:
Tree Stratum (Plot size: _____)				Number of Dominant Species That are OBL, FACW, or FAC: <u>1</u> (A)
1. _____	_____	<input type="checkbox"/> 0.0%	_____	Total Number of Dominant Species Across All Strata: <u>2</u> (B)
2. _____	_____	<input type="checkbox"/> 0.0%	_____	Percent of dominant Species That Are OBL, FACW, or FAC: <u>50.0%</u> (A/B)
3. _____	_____	<input type="checkbox"/> 0.0%	_____	
4. _____	_____	<input type="checkbox"/> 0.0%	_____	
	0	= Total Cover		
Sapling/Shrub Stratum (Plot size: <u>15' x 15'</u>)				Prevalence Index worksheet:
1. <u>Rosa nutkana</u>	30	<input checked="" type="checkbox"/> 63.8%	FAC	Total % Cover of: _____ Multiply by: _____
2. <u>Mahonia aquifolium</u>	10	<input checked="" type="checkbox"/> 21.3%	FACU	OBL species <u>0</u> x 1 = <u>0</u>
3. <u>Alnus rubra</u>	3	<input type="checkbox"/> 6.4%	FAC	FACW species <u>0</u> x 2 = <u>0</u>
4. <u>Thuja plicata</u>	2	<input type="checkbox"/> 4.3%	FAC	FAC species <u>35</u> x 3 = <u>105</u>
5. <u>Sambucus racemosa</u>	2	<input type="checkbox"/> 4.3%	FACU	FACU species <u>12</u> x 4 = <u>48</u>
	47	= Total Cover		UPL species <u>0</u> x 5 = <u>0</u>
Herb Stratum (Plot size: <u>5 x 5'</u>)				Column Totals: <u>47</u> (A) <u>153</u> (B)
1. _____	0	<input type="checkbox"/> 0.0%	_____	Prevalence Index = B/A = <u>3.255</u>
2. _____	0	<input type="checkbox"/> 0.0%	_____	
3. _____	0	<input type="checkbox"/> 0.0%	_____	
4. _____	0	<input type="checkbox"/> 0.0%	_____	
5. _____	0	<input type="checkbox"/> 0.0%	_____	
6. _____	0	<input type="checkbox"/> 0.0%	_____	
7. _____	0	<input type="checkbox"/> 0.0%	_____	
8. _____	0	<input type="checkbox"/> 0.0%	_____	
9. _____	0	<input type="checkbox"/> 0.0%	_____	
10. _____	0	<input type="checkbox"/> 0.0%	_____	
11. _____	0	<input type="checkbox"/> 0.0%	_____	
	0	= Total Cover		
Woody Vine Stratum (Plot size: _____)				
1. _____	_____	<input type="checkbox"/> 0.0%	_____	
2. _____	_____	<input type="checkbox"/> 0.0%	_____	
	0	= Total Cover		
% Bare Ground in Herb Stratum: <u>0</u>				

Hydrophytic Vegetation Indicators:

1 - Rapid Test for Hydrologic 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)

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

Hydrophytic Vegetation Present? Yes No

Remarks: no herbs. only mulch

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Appendix B — Precipitation Data

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

Monthly precipitation data for Anacortes, Washington.

		Long-term rainfall records ^a			Rain fall ^a	Condition dry, wet, normal ^b	Condition Value	Month weight value	Product of previous two columns
	Month	3 yrs. in 10 less than	Average	3 yrs. in 10 more than					
1 st prior month	Apr	1.49	1.86	2.12	3.56	W	3	3	9
2 nd prior month	Mar	1.67	2.21	2.58	2.14	N	2	2	4
3 rd prior month	Feb	1.75	2.49	2.95	1.58	D	1	1	1
								Sum	14

^aNRCS 2014

^bConditions 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

Condition value:

Dry (D) =1
 Normal (N) =2
 Wet (W) =3

Conclusions: Normal precipitation conditions were present prior to the field visit.

Appendix B-2. Daily Precipitation 10 days preceding field work, Anacortes, Washington

Date (2013)	Daily Precipitation (inches) ^a
May 5	0.00
May 4	0.00
May 3	0.00
May 2	0.00
May 1	0.00
Apr 30	0.08
Apr 29	0.08
Apr 28	0.12
Apr 27	0.00
Apr 26	M

^aNOAA 2014
"M"= missing data

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