

**I-5/SR 502 Interchange Mitigation Sites
(Johnson Farm Wetland Mitigation Site and Gee Creek Riparian Area)**

USACE IP 200501249

Southwest Region

2014 MONITORING REPORT

Wetlands Program

Issued March 2015



**Washington State
Department of Transportation**

Environmental Services Office

Author:

Jennie Husby

Editor:

Tony Bush

Contributors:

Kristen Andrews and Sean Patrick

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

Tony Bush, Wetlands Program
WSDOT, Environmental Services Office
P. O. Box 47332, Olympia, WA 98504
Phone: 360-570-6640 E-mail: busht@wsdot.wa.gov

Monitoring reports are published on the web at: <http://www.wsdot.wa.gov/Environment/Wetlands/Monitoring/reports.htm>

I-5/SR 502 Interchange Mitigation Sites

(Johnson Farm Wetland Mitigation Site and Gee Creek Riparian Area)

USACE NWP 200501249



General Site Information		
USACE NWP 23 Number	200501249	
Mitigation Location	9 miles north of Vancouver and 5 miles west of battleground in Clark County	
LLID Number	1226411457911	
Construction Date	2008	
Monitoring Period	2010-2019	
Year of Monitoring	5 of 10	
Area of Project Impact	6.42 acres	
Type of Mitigation¹	Wetland Establishment	Wetland Enhancement
Planned Area of Mitigation	12.0 acres	5.2 acres

¹ For additional information on mitigation acreage and components see Appendix 3, Table 1.

This Page Intentionally Left Blank

Summary of Monitoring Results and Management Activities (2014)

Performance Standards (for Johnson unless noted at Gee Creek)	2014 Results ²	Management Activities
Wetland delineated and Cowardin vegetation classes assessed	22.76 acres (See Appendix 5)	
Wetland hydrology present	Present	
Increased headwater storage in constructed depressions and swales.	Photo documentation taken (Appendix 4)	
The site will provide measurable seasonal discharge (frequency, duration) to the downstream tributary of Gee Creek.	Meter was not installed this year.	
Forested wetland: minimum 400 living native trees per acre	775 trees/acre (CI _{80%} =557-992) (PFO & PSS combined)	
Forested wetland: minimum 4,000 living native shrubs per acre	2,899 shrubs/acre (CI _{80%} =2628-3170) (PFO & PSS combined)	
Forested wetland: at least 2 species of trees and 4 species of shrubs present; no more than 60% cover of any one species	7 tree species and 11 shrub species; none >60% cover (PFO & PSS combined)	
Scrub-shrub wetland: minimum 4,000 living native shrubs per acre	2,899 shrubs/acre (CI _{80%} =2,628-3,170) (PFO & PSS combined)	
Scrub-shrub wetland: at least 4 species of shrubs present; no more than 60% cover of any one species	11 shrub species; none >60% cover (PFO & PSS combined)	
Buffer: minimum 400 living native trees per acre	184 trees/acre (CI _{80%} =135-232)	
Buffer: minimum 4,000 living native shrubs per acre	4,488 shrubs/acre (CI _{80%} =3,937-5,039)	
Buffer: at least 2 species of trees and 4 species of shrubs present; no more than 60% cover of any one species	11 tree species and 11 shrub species; snowberry >60% cover	
Emergent wetland: minimum 60% cover of native FACW and wetter species	67% cover (CI _{80%} = 56-77%)	
Gee Creek riparian enhancement: minimum 400 living native trees per acre	670 trees/acre (CI _{80%} = 549-791)	Weed control (9/2/2014).
Gee Creek riparian enhancement: minimum 4,000 living native shrubs per acre	5,313 shrubs/acre (CI _{80%} =4,385-6,241)	

² Estimated values are presented with their corresponding statistical confidence interval. For example, 775 trees/acre (CI_{80%} = 557-992) means we are 80% confident that the true density value is between 557 and 992 trees per acre.

Gee Creek riparian enhancement: at least 2 species of trees and 4 species of shrubs present; no more than 60% cover of any one species	6 tree species and 16 shrub species; none >60% cover	
No more than 15% cover of blackberries and Class A noxious weeds in the combined emergent, scrub shrub, forest, and buffer planting areas of the Johnson mitigation site; Japanese knotweed shall not be present on-site	<1% cover of blackberries and Class A noxious weeds: no Japanese knotweed observed	Weed control performed on 6 dates in 2013 and 2 dates in 2014.
No more than 20% cover of reed canary grass in the combined emergent, scrub shrub, forest, and buffer planting areas of the Johnson mitigation site	<5% cover of reed canarygrass	
Reed canary grass in the Johnson mitigation site enhancement areas will be managed at a threshold 10% below the baseline conditions	Cover exceeds threshold	

Report Introduction

This report summarizes fifth-year (Year-5) monitoring activities at the Interstate (I) 5/State Route (SR) 502 Interchange Mitigation Sites (Johnson Wetland Site and Gee Creek Riparian Area). Included are a site description, the performance standards, an explanation of monitoring methods, and an evaluation of site development. Monitoring activities in 2014 included a wetland delineation, vegetation surveys, photo-documentation, and assessments of wetland hydrology. The wetland delineation was conducted on April 28 and April 29. Hydrology visits occurred on March 11, April 2, and April 15. Vegetation monitoring was conducted at the Johnson Wetland Mitigation Site on July 22 to 23 and at the Gee Creek Riparian Area on August 13.

What is the I-5/SR 502 Interchange Johnson Wetland Mitigation Site?

The 39.8-acre Johnson Wetland Mitigation Site (Figure 1) consists of establishment, enhancement, and preservation areas. This site was created to compensate for the loss of 6.42 acres of wetlands due to the construction of new Interstate (I) 5 on and off ramps and a bridge that spans I-5 to connect to SR 502. This large and diverse mitigation site is designed to provide a variety of functions including wildlife habitat, water quality improvement, nutrient and sediment retention, groundwater recharge, base flow contributions to Gee Creek, and flood flow attenuation.



Figure 1 Johnson Site Sketch

The Johnson Mitigation Site contains an existing pond surrounded by a mosaic of emergent, scrub-shrub, and forested wetland communities. The existing forested area in the northwestern corner of the site is under-planted with western red cedar (*Thuja plicata*). Appendix 2 includes site directions.

What is the I-5/SR 502 Interchange Gee Creek Riparian Area?

The Gee Creek Riparian Area is located in the median of Interstate 5 (Figure 2). This area consists of 9.8 acres of preserved mature riparian forest and approximately 11.0 acres of riparian forest establishment. Appendix 2 includes site directions.

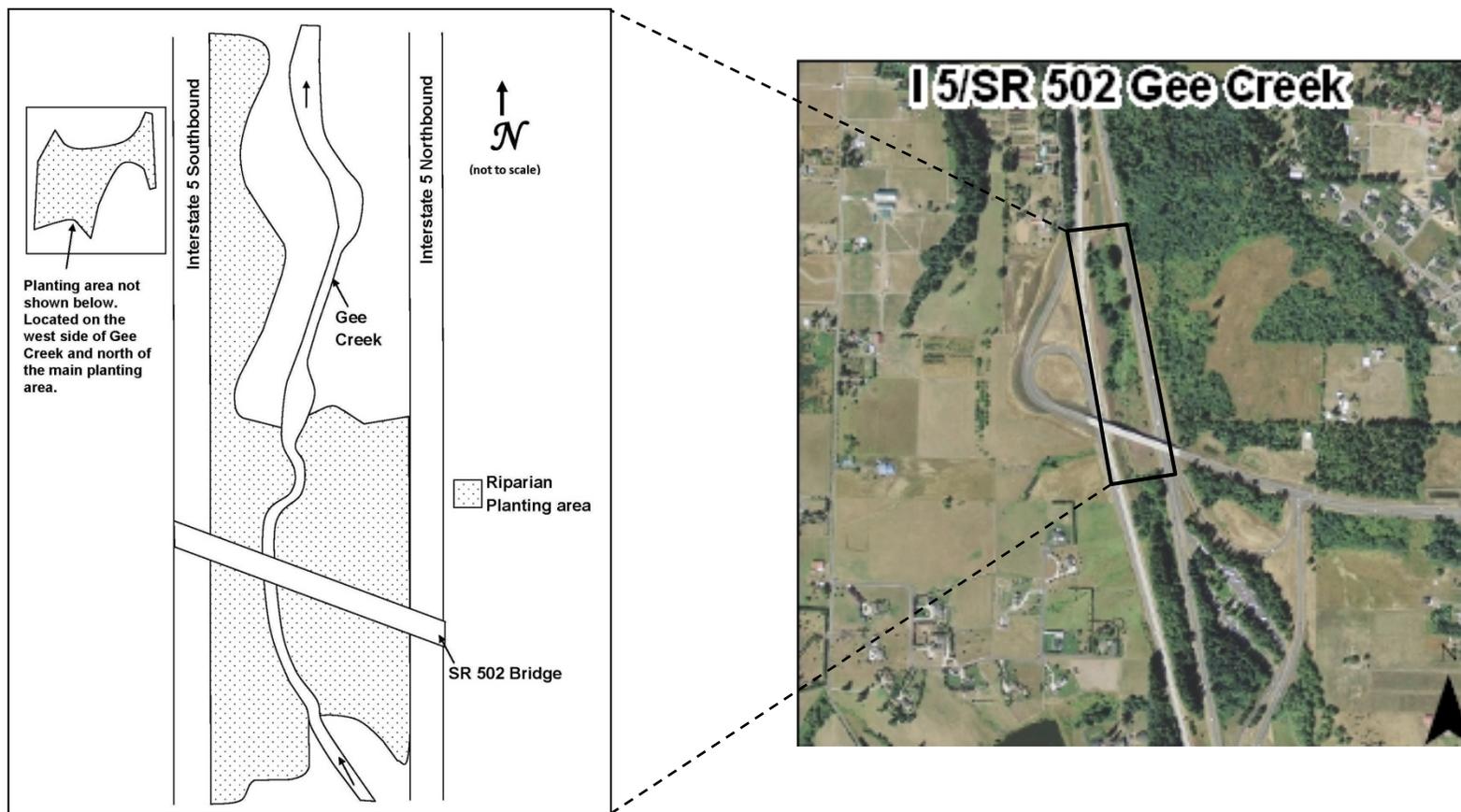


Figure 2 Gee Creek Site Sketch

What are the performance standards for these sites?

Year 5

Performance Standard 1 (Johnson)

Wetlands will be delineated at monitoring year five to assess the development of estimated wetland conditions and Cowardin vegetation classes.

Performance Standard 2 (Johnson)

The soils will be saturated to the surface, or standing water will be present 12 inches or less below the surface for at least 10 percent of the growing season (growing season as defined in the Soil Survey of Clark County, WA, USDA, 1972) in years when rainfall meets or exceeds the 30-year precipitation average.

Performance Standard 3 (Johnson)

The wetland will provide increased headwater storage compared to baseline conditions in constructed depressions and swales.

Performance Standard 4 (Johnson)

The site will provide measurable seasonal discharge (frequency, duration) to the downstream tributary of Gee Creek.

Performance Standard 5 (Johnson)

At monitoring year 3, 5, and 7, there will be a minimum density of native trees and/or shrubs in Forested, Scrub Shrub, and Buffer areas as follows (**Performance Standards 5–12**):

Forested wetland:

- minimum density of 400 living native trees per acre

Performance Standard 6 (Johnson)

Forested wetland:

- minimum density of 4,000 living native shrubs per acre

Performance Standard 7 (Johnson)

Forested wetland:

- at least two species of native trees and four species of native shrubs will be present in the forested area. No single species will provide more than 60 percent total aerial cover.

Performance Standard 8 (Johnson)

Scrub Shrub wetland:

- minimum density of 4,000 living native shrubs per acre

Performance Standard 9 (Johnson)

Scrub Shrub wetland:

- at least four species of native shrubs will be present in the Scrub Shrub area. No single species will provide more than 60 percent total aerial cover.

Performance Standard 10 (Johnson)

Buffer:

- minimum density of 400 living native trees per acre

Performance Standard 11 (Johnson)

Buffer:

- minimum density of 4,000 living native shrubs per acre

Performance Standard 12 (Johnson)

Buffer:

- at least two species of native trees and four species of native shrubs will be present in the forested area. No single species will provide more than 60 percent total aerial cover.

Performance Standard 13 (Johnson)

At monitoring year 3, 5, and 7, there will be a minimum percent cover of native emergent vegetation in emergent areas as follows:

- Year 5 - minimum of 60 percent aerial cover of native facultative wet and wetter species within the emergent zone.

Performance Standard 14 (Gee Creek)

At monitoring year 3, 5, and 7, there will be a minimum density of native trees and/or shrubs riparian enhancement areas as follows (**Performance Standards 14–16**):

- minimum density of 400 living native trees per acre

Performance Standard 15 (Gee Creek)

- minimum density of 4,000 living native shrubs per acre

Performance Standard 16 (Gee Creek)

- at least two species of native trees and four species of native shrubs will be present in the forested area. No single species will provide more than 60% total aerial cover.

Performance Standard 17 (Johnson)

At monitoring years 1, 3, 5, 7, and 10, Invasive Species will be managed as follows (**Performance Standards 17–19**):

The aerial extent of blackberry (*Rubus* species) and Class A noxious weeds will not exceed 15 percent in the combined emergent, scrub shrub, forest, and buffer planting areas of the Johnson mitigation site. Japanese knotweed (*Fallopia japonica*) shall not be present in any amount within the mitigation site.

Performance Standard 18 (Johnson)

Reed canary grass - Created wetland areas

The aerial extent of reed canary grass (*Phalaris arundinacea*) will not exceed 20 percent in the combined emergent, scrub shrub, forest, and buffer planting areas of the Johnson mitigation site.

Performance Standard 19 (Johnson)

Existing wetland (enhancement) areas

The aerial extent of reed canary grass in the Johnson mitigation site will be managed at a threshold 10 percent below the existing baseline conditions established in Performance Standard 6A. In monitoring years 7 and 10 (final year of monitoring), reed canary grass will exist as an understory component that does not out compete the dominant native tree and shrub species or exceed existing baseline conditions.

Appendix 1 shows the as-built planting plan (Corlett 2009 and 2008).

Year 10

Performance Standard 1 (Johnson)

At monitoring year 10, there will be a minimum density of native trees and/or shrubs in Forested, Scrub Shrub, and Buffer areas as follows (**Performance Standards 1–3**):

Forested wetland:

- minimum density of 300 living native trees per acre

Performance Standard 2 (Johnson)

Forested wetland:

- at least two species of native trees and four species of native shrubs will be present in the forested area. No single species will provide more than 60 percent total aerial cover.

Performance Standard 3 (Johnson)

Scrub Shrub wetland:

- at least four species of native shrubs will be present in the Scrub Shrub area. No single species will provide more than 60 percent total aerial cover.

Performance Standard 4 (Johnson)

Buffer:

- minimum density of 4,000 living native shrubs per acre

Performance Standard 5 (Gee Creek)

At monitoring year 10, there will be a minimum density of native trees and/or shrubs riparian enhancement areas as follows (**Performance Standards 4-6**):

- minimum density of 300 living native trees per acre

Performance Standard 6 (Gee Creek)

- minimum density of 3,000 living native shrubs per acre

Performance Standard 7 (Gee Creek)

- at least two species of native trees and four species of native shrubs will be present in the forested area. No single species will provide more than 60 percent total aerial cover.

Performance Standard 8 (Johnson)

At monitoring years 1, 3, 5, 7, and 10, Invasive Species will be managed as follows (**Performance Standards 7-8**):

The aerial extent of blackberry species and Class A noxious weeds will not exceed 15 percent in the combined emergent, scrub shrub, forest, and buffer planting areas of the Johnson mitigation site. Japanese knotweed shall not be present in any amount within the mitigation site.

Performance Standard 9 (Johnson)

Reed canary grass - Created wetland areas

The aerial extent of reed canary grass will not exceed 20 percent in the combined emergent, scrub shrub, forest, and buffer planting areas of the Johnson mitigation site.

How were the performance standards evaluated?

To evaluate standards for vegetative cover at the Johnson site, a 400-meter baseline was established along the eastern edge of the site (Figure 3). Twenty-five sampling transects were placed perpendicular to the baseline segments using a systematic random sampling method. The unequal-area belt transect method was used to estimate native woody density in the forested and scrub-shrub wetland (Performance Standards 5–9), and in the buffer (Performance Standards 10–12). Twenty-one one-meter-wide belt transect sample units were positioned along the sampling transects in the scrub-shrub and forested wetland. (Four transects did not fall within the forested/scrub-shrub zone.) Twenty-five one-meter-wide belt transect sample units were positioned along the sampling transects in the buffer. The point-line method was used to estimate herbaceous cover in the emergent area (Performance Standard 13). Sixteen four-meter-long point-line sample units (20 points each) were randomly positioned along 15 sampling transects in the emergent areas (Figure 4). The cover of invasive species on-site was visually estimated (Performance Standards 17 -19).

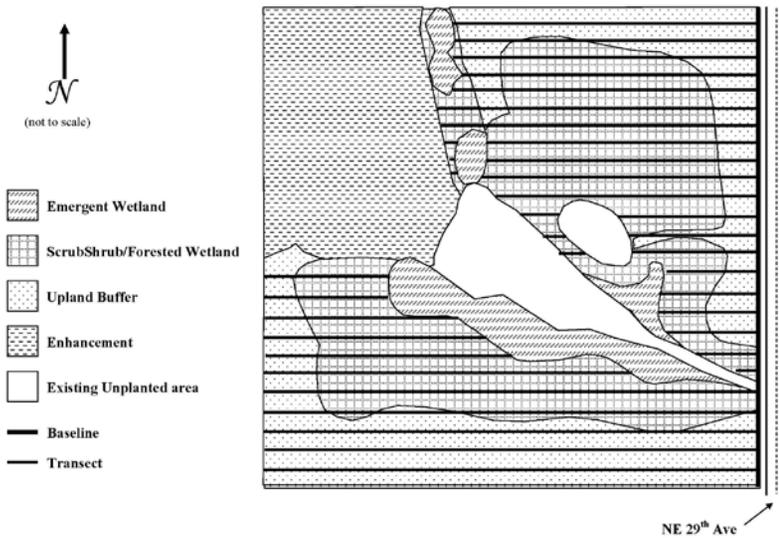


Figure 3 Johnson Site Sampling Design for Woody Species (2014)

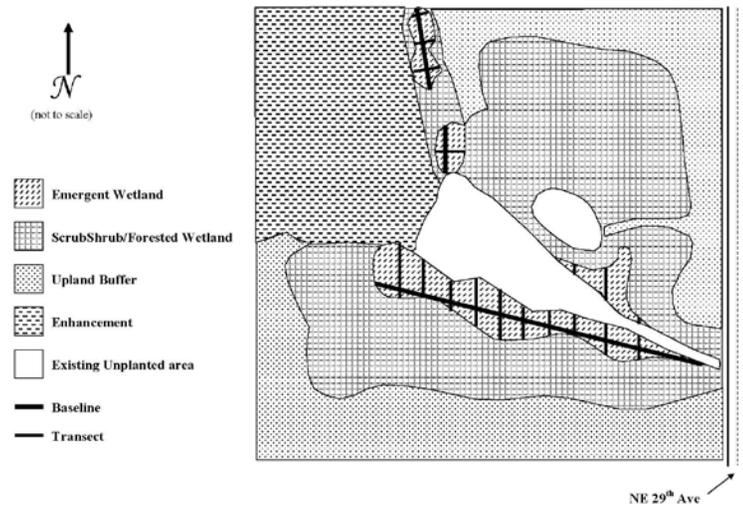


Figure 4 Johnson Site Sampling Design for Herbaceous Species (2014)

To evaluate standards for vegetation at the Gee Creek Site, a 799-meter baseline was established in three segments: two along the western edge of the site and one along the eastern edge of the site (Figure 5). Sixteen sampling transects were placed perpendicular to the baseline segments using a systematic random sampling method. The unequal-area belt transect method was used to estimate native woody density (Performance Standards 14-16). Sixteen one-meter-wide belt transect sample units were positioned along the sampling transects.

Johnson Wetland: WSDOT staff collected hydrology data and 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) (Performance Standards 1 and 2) (Appendix 5 contains the Wetland Delineation report and a complete methods section for that task). Four permanent hydrology pit locations have been established. During each monitoring visit, visual observations were made to determine the extent of inundation and surface saturation. Depth and location of standing water was recorded. At each pit location, in the absence of inundation or surface saturation,

subsurface observations were made. Photo documentation was taken at three permanent photo points to document the extent of seasonal ponding (Performance Standard 3) (Appendix 4).

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

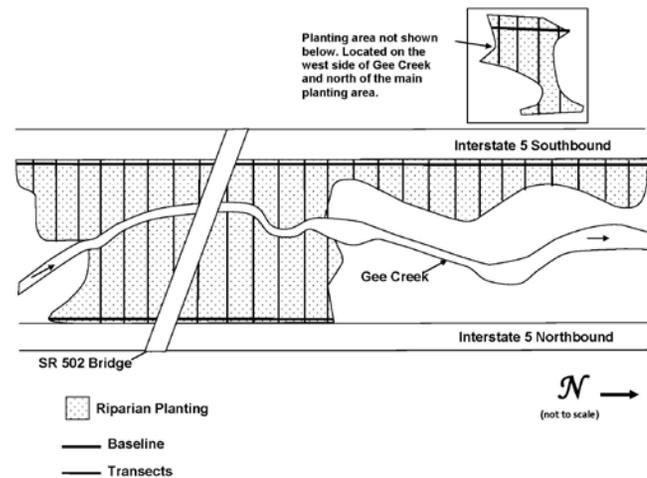


Figure 5 Gee Creek Site Sampling Design (2014)

How is the site developing?

Johnson Wetland Mitigation Site

In general, the Johnson site is developing into a diverse and thriving wetland community. The tree density standard is not being met for the buffer and the shrub density standard is not being met for the wetland. However, density in both zones appears sufficient to support a diverse community and to develop multiple strata in the future. Replanting is not recommended in most areas.

Two emergent areas planted in the northeast quadrant appear to be struggling. They were both inundated at the time of monitoring with little vegetation and were not included in the emergent sampling. These areas are changed to scrub-shrub/forested wetland in the 2014 site map (Figure 1) as they fit better into this zone type, although common spikerush (*Eleocharis palustris*) appears to be colonizing the area and the community may eventually develop into an emergent zone as planned.

Many woody species in the forested/scrub-shrub area that surrounds this emergent community have died. This area may be inundated for prolonged periods, killing the woody species and inhibiting the growth of herbaceous species. Soft-stem bulrush (*Schoenoplectus tabernaemontani*) will have higher survival in deeper areas and willows (*Salix* species) are the only woody species growing successfully in this section of the site.

Not any one woody or herbaceous species has more than 60 percent cover in their respective zones except the buffer. The buffer zone has 60 percent or more cover of snowberry (*Symphoricarpos albus*).

Cover of noxious weeds remains low across the site. There is some reed canary grass on-site, primarily scattered patches around the edges of the existing ponded area and along the eastern fence. Tansy ragwort (*Senecio jacobaea*) was found in small amounts scattered about the site, primarily in the buffer and under-planted forested areas. One Vochin knapweed (*Centaurea nigrescens*), a Class A noxious weed was found on site and pulled.

Gee Creek Riparian Area

The Gee Creek riparian enhancement area has developed well, with the exception of the bottom of the creek valley where nearly all plantings died and reed canary grass dominates cover. This area was not included in the woody density sampling (Performance Standards 14-16). All other areas are exceeding the performance standards (14-16).

Johnson wetland mitigation site has met six of the year 10 performance standards and Gee Creek Riparian Area has met all year 10 performance standards in 2014 (Appendix 3, Table 3). Minimum values for the year 10 woody density performance standards are lower than the year five standards. Both sites however, exceed the minimum standards for years five through 10.

Results for Performance Standard 1

(Wetland delineation 12.0 acres of wetland will be created and 5.2 acres will be enhanced):

A delineation conducted in April 2014 indicated wetland acreage was 22.76 acres. Appendix 5 contains the 2014 Wetland Delineation report.

Results for Performance Standard 2

(Wetland hydrology present):

In 2014, water was present at or above the soil surface in all intended wetland areas of the site during two spring hydrology monitoring visits on March 11 and April 2 (Appendix 3, Table 2) (Photo 1). At the third visit on April 15, water was present at 12” below the soil surface in the only pit dug. Two other hydrology sites were observed at this visit and surface indicators of water were found at both.

Results for Performance Standard 3

(Increased headwater storage in constructed depressions and swales):

Photographic documentation shows continued headwater storage in constructed depressions and swales (Appendix 4). Photographs were taken from locations approximate to the 2012 permanent photo-points.



**Photo 1
Inundation in the forested wetland (April 2014)**

Results for Performance Standard 4

(The site will provide measurable seasonal discharge to the downstream tributary of Gee Creek):

A water meter was not installed this year.

Results for Performance Standard 5

(Forested wetland: minimum 400 living native trees per acre):

The density of native tree species in the forested and scrub-shrub wetland areas combined (Photos 2 and 3) is estimated at 775 trees per acre ($CI_{80\%} = 557-992$). This value exceeds the performance standard even though it includes the scrub-shrub wetland areas. The dominant tree species were black cottonwood (*Populus balsamifera*) and Oregon ash (*Fraxinus latifolia*).

Results for Performance Standard 6

(Forested wetland: minimum 4,000 living native shrubs per acre):

The density of native shrub species in the forested and scrub-shrub wetland areas combined (Photos 2 and 3) is estimated at 2,899 shrubs per acre ($CI_{80\%} = 2,628-3,170$). This value is below the performance standard. However, it is still fairly dense and likely adequate to achieve the objective of promoting the development of a dense native plant community in this zone. The dominant shrub species in these areas are redosier dogwood (*Cornus alba*) and willow. Overall native woody density (trees and shrubs) in the combined forested and scrub-shrub wetland areas is estimated at 3,672 plants per acre ($CI_{80\%} = 3,233-4,110$).



Photo 2
Woody density in the forested wetland (July 2014)

Results for Performance Standard 7

(Forested wetland: at least 2 species of trees and 4 species of shrubs present; no more than 60% cover of any one species):

In the forested and scrub-shrub areas combined, seven tree species and eleven shrub species were encountered in the sample (Photos 2 and 3). Based on visual estimates, no single species is currently approaching or exceeding 60 percent cover in these areas. Based on analysis of our sample, redosier dogwood is the most abundant species in these areas (59 percent of the woody plants in our sample were of this species) but the cover of this species is currently still fairly low due to slow growth.

Results for Performance Standard 8

(Scrub-shrub wetland: minimum 4,000 living native shrubs per acre)

The scrub-shrub and forested wetland areas were combined for sampling. See results for Performance Standard 6.

Results for Performance Standard 9

(Scrub-shrub wetland: at least 4 species of shrubs present; no more than 60% cover of any one species)

The scrub-shrub and forested wetland areas were combined for sampling. See results for Performance Standard 7.

Results for Performance Standard 10

(Buffer: minimum 400 living native trees per acre):

The density of native tree species in the buffer (Photo 4) is estimated at 184 trees per acre ($CI_{80\%} = 135-232$). This value is below the performance standard. The dominant tree species in this zone was Oregon white oak (*Quercus garryana*). The overall native woody density (trees and shrubs) in the buffer was quite high, at an estimated 4,658 plants per acre ($CI_{80\%} = 4,081-5,236$).

Results for Performance Standard 11

(Buffer: minimum 4,000 living native shrubs per acre):

The density of native shrub species in the buffer (Photo 4) is estimated at 4,488 shrubs per acre ($CI_{80\%} = 3,937-5,039$). This value meets the performance standard.



Photo 3
Woody density in the scrub-shrub wetland (July 2014)



Photo 4
Woody density in the buffer (July 2014)

Results for Performance Standard 12

(Buffer: at least 2 species of trees and 4 species of shrubs present; no more than 60% cover of any one species)

In the buffer, 11 tree species and 11 shrub species were encountered in the sample (Photo 4). Based on visual estimates, snowberry is exceeding 60 percent cover in these areas. Snowberry is estimated to be more abundant than all other woody species combined (88 percent of the woody plants in our sample were of this species).

Results for Performance Standard 13

(Emergent wetland: minimum 60% cover of native FACW and wetter species)

The cover of native facultative wet or wetter herbaceous species in the emergent areas is estimated at 67% ($CI_{80\%} = 56-77\%$) (Photos 5-9). The dominant species in these areas are needle spikerush (*Eleocharis acicularis*), common spikerush, and swamp smartweed (*Persicaria hydropiperoides*).



Photo 5
Emergent area E1 (July 2014)



Photo 6
Emergent area E3 (July 2014)



Photo 7
Emergent area E4 (July 2014)



Photo 8
Emergent area E5 (July 2014)



Photo 9
Emergent area E6 (July 2014)

Results for Performance Standard 14

(Gee Creek riparian enhancement: minimum 400 living native trees per acre)

The density of native tree species at the Gee Creek riparian enhancement area (Photo 10) is estimated at 670 trees per acre ($CI_{80\%} = 549-791$). This value exceeds the performance standard. The dominant tree species encountered in this area were Oregon white oak and black cottonwood.

Results for Performance Standard 15

(Gee Creek riparian enhancement: minimum 4,000 living native shrubs per acre)

The density of native shrub species at the Gee Creek riparian enhancement area (Photo 10) is estimated at 5,313 shrubs per acre ($CI_{80\%} = 4,385-6,241$). This value is slightly below the performance standard, but is likely adequate to achieve the objective of enhancing the native forested riparian areas. The dominant shrub species in this area is snowberry. The overall native woody density (trees and shrubs) in this area is estimated at 5,983 plants per acre ($CI_{80\%} = 5,037-6,929$).

Results for Performance Standard 16

(Gee Creek riparian enhancement: at least 2 species of trees and 4 species of shrubs present; no more than 60% cover of any one species)

At the Gee Creek riparian enhancement area, six tree species and 16 shrub species were encountered in the sample (Photo 10). Based on visual estimates, no single species is currently approaching or exceeding 60 percent cover in these areas.



Photo 10
Native woody density at the Gee Creek riparian enhancement area (July 2014)

Results for Performance Standard 17

(No more than 15% cover of blackberries and Class A noxious weeds in the combined emergent, scrub shrub, forest, and buffer planting areas of the **Johnson mitigation site**; Japanese knotweed shall not be present on-site):

The cover of non-native blackberries and Class A noxious weeds in the above-listed areas of the Johnson mitigation site is visually estimated at less than one percent. Japanese knotweed was not observed on-site during monitoring activities.

Results for Performance Standard 18

(No more than 20% cover of reed canary grass in the combined emergent, scrub shrub, forest, and buffer planting areas of the **Johnson mitigation site**):

The cover of reed canary grass in the above-listed areas of the Johnson mitigation site is visually estimated at less than five percent.

Results for Performance Standard 19

(Reed canary grass in the **Johnson mitigation site** will be managed at a threshold 10% below the baseline conditions)

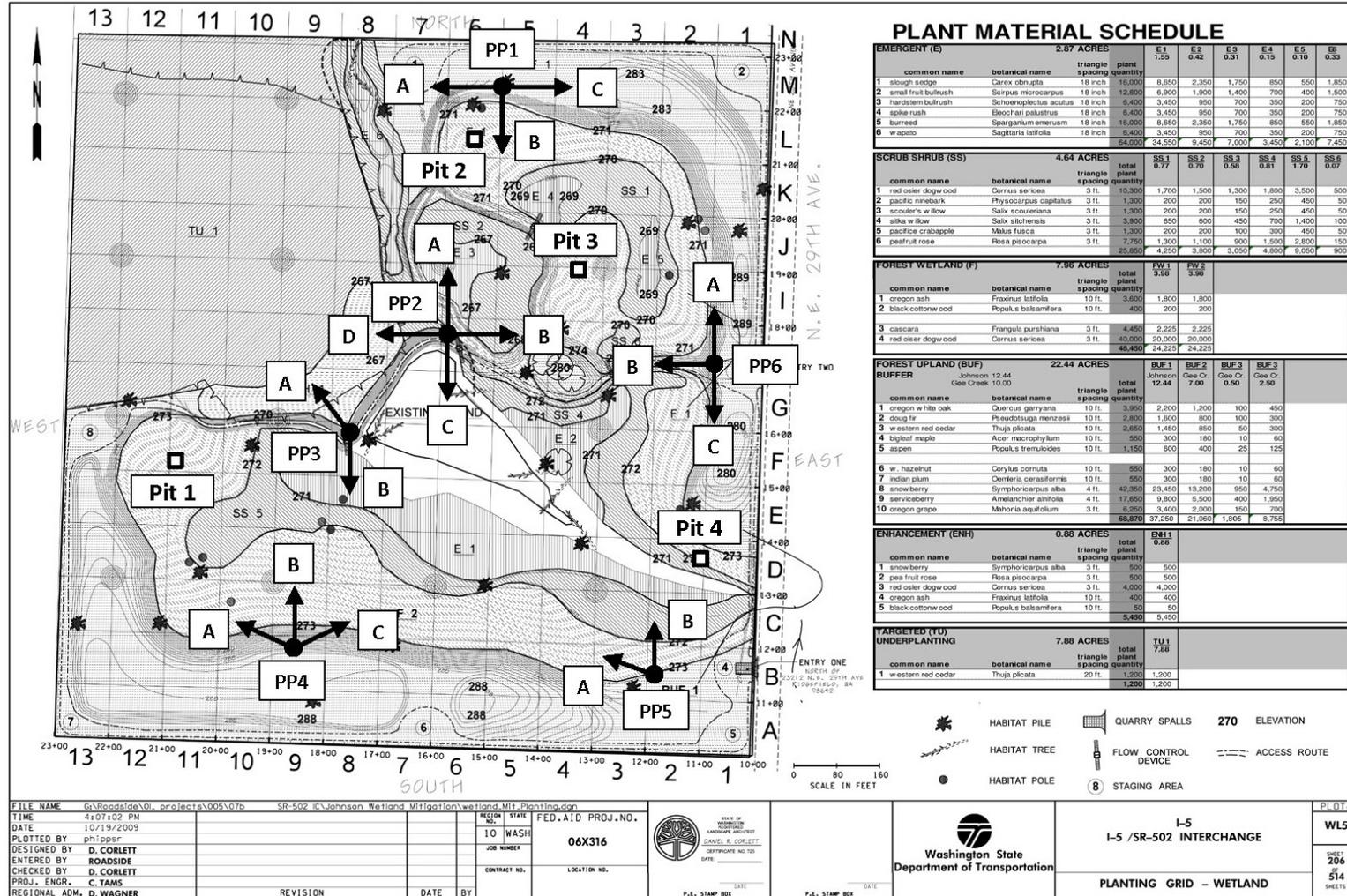
Reed canary grass in the existing wetland (enhancement) areas continues to exceed this Performance Standard in 2014 based on a post-construction baseline. A pre-construction baseline cover value was not measured and therefore cannot be compared to the current measurement. The cover measured in 2009 (post-construction) was 825 square feet. In 2012, the extent of reed canary grass in this area was determined to be 2,954 square feet. Based on visual estimates, this measurement has not changed significantly in 2014. The reed canary grass does not appear to be outcompeting the dominate tree and shrub species, though control is recommended.

What is planned for this site?

It is recommended that the thistles (*Cirsium* species), tansy ragwort, and reed canary grass be treated before they become widespread. Also, eradicate Vochin knapweed if found on site.

Appendix 1 – Planting Plan (As-Built) with Photo Point Locations and Hydrology Pit or Well Locations

Johnson Wetland Mitigation Site As-built Planting Plan with Photo Point and Hydrology Pit Locations
(from Corlett 2009)



PLANT MATERIAL SCHEDULE

EMERGENT (E)				2.87 ACRES							
common name	botanical name	triangle spacing	plant quantity	E1 1.55	E2 0.42	E3 0.31	E4 0.15	E5 0.10	E6 0.10	EB 0.33	
1	slough sedge	Carex douglasii	18 inch	16,000	8,650	2,350	1,750	850	540	1,850	
2	small fruit bullrush	Scirpus microcarpus	18 inch	12,800	6,900	1,900	1,400	700	400	1,500	
3	hardstem bullrush	Schoenoplectus acutus	18 inch	8,400	3,450	950	700	350	200	750	
4	spike rush	Eleocharis palustris	18 inch	6,400	3,450	950	700	350	200	750	
5	burreed	Sparganium emerum	18 inch	18,000	8,650	2,350	1,750	850	540	1,850	
6	w.apato	Sagittaria latifolia	18 inch	8,400	3,450	950	700	350	200	750	
				68,000	34,550	9,450	7,000	3,450	2,100	7,450	
SCRUB SHRUB (SS)				4.64 ACRES							
common name	botanical name	triangle spacing	plant quantity	SS.1 0.77	SS.2 0.70	SS.3 0.58	SS.4 0.31	SS.5 1.10	SS.6 0.07		
1	red osier dogwood	Cornus sericea	3 ft.	10,300	1,700	1,500	1,300	1,800	3,500	500	
2	pacific ninebark	Physocarpus capitatus	3 ft.	1,300	200	200	150	250	450	50	
3	scouler's willow	Salix scouleriana	3 ft.	1,300	200	200	150	250	450	50	
4	silka willow	Salix stichensis	3 ft.	3,900	650	600	450	700	1,400	100	
5	pacifice crabapple	Malus fusca	3 ft.	1,300	200	200	100	300	450	50	
6	pearfruit rose	Rosa pisocarpa	3 ft.	7,750	1,300	1,100	900	1,500	2,800	150	
				25,850	4,250	3,850	3,050	4,850	6,050	900	
FOREST WETLAND (F)				7.96 ACRES							
common name	botanical name	triangle spacing	plant quantity	FW.1 3.98		FW.2 3.98					
1	oregon ash	Fraxinus latifolia	10 ft.	3,600	1,800	1,800					
2	black cottonwood	Populus balsamifera	10 ft.	450	200	200					
3	casacara	Frangula purshiana	3 ft.	4,450	2,225	2,225					
4	red osier dogwood	Cornus sericea	3 ft.	40,000	20,000	20,000					
				48,450	24,225	24,225					
FOREST UPLAND (BUF)				22.44 ACRES							
common name	botanical name	triangle spacing	plant quantity	BUF.1 12.44		BUF.2 7.00		BUF.3 3.00		BUF.4 2.50	
1	oregon white oak	Quercus garryana	10 ft.	2,200	1,100	100	450				
2	dogwood	Pseudotsuga menziesii	10 ft.	2,800	800	100	300				
3	western red cedar	Thuja plicata	10 ft.	2,650	1,450	850	50	300			
4	bigsleaf maple	Acer macrophyllum	10 ft.	550	300	180	10	60			
5	aspen	Populus tremuloides	10 ft.	1,150	600	400	25	125			
6	w. hazelnut	Corylus cornuta	10 ft.	550	300	180	10	60			
7	molain plum	Cemelia cerasiformis	10 ft.	550	300	180	10	60			
8	snowberry	Symphoricarpos alba	4 ft.	42,350	23,450	13,200	950	4,750			
9	serviceberry	Amelanchier alnifolia	4 ft.	17,650	9,800	5,500	400	1,950			
10	oregon grape	Mahonia aquifolium	3 ft.	8,250	3,400	2,000	150	700			
				68,870	37,250	21,050	1,505	8,755			
ENHANCEMENT (ENH)				0.88 ACRES							
common name	botanical name	triangle spacing	plant quantity	ENH.1 0.88							
1	snow berry	Symphoricarpos alba	3 ft.	500	500						
2	pea fruit rose	Rosa pisocarpa	3 ft.	500	500						
3	red osier dogwood	Cornus sericea	3 ft.	4,000	4,000						
4	oregon ash	Fraxinus latifolia	10 ft.	400	400						
5	black cottonwood	Populus balsamifera	10 ft.	50	50						
				5,450	5,450						
TARGETED (TU) UNDERPLANTING				7.88 ACRES							
common name	botanical name	triangle spacing	plant quantity	TU.1 7.88							
1	western red cedar	Thuja plicata	20 ft.	1,200	1,200						
				1,200	1,200						

Appendix 2 – Photo Points

Johnson Wetland Mitigation Site

The photographs below were taken from permanent photo-points on July 23, 2014 and document current site development.



Photo Point 1a



Photo Point 1b



Photo Point 1c



Photo Point 2a



Photo Point 2b



Photo Point 2c



Photo Point 2d



Photo Point 3a



Photo Point 3b



Photo Point 4a



Photo Point 4b



Photo Point 4c



Photo Point 5a



Photo Point 5b



Photo Point 6a



Photo Point 6b



Photo Point 6c

Gee Creek Riparian Area

The photographs below were taken from permanent photo-points on August 13, 2014 and document current site development.



Photo Point 1



Photo Point 2



Photo Point 3



Photo Point 4a



Photo Point 4b



Photo Point 5



Photo Point 6



Photo Point 7a



Photo Point 7b



Photo Point 8

Driving Directions:

Johnson Wetland Mitigation Site: Head south on Interstate 5. Take Exit #11 to SR 502/NE 219th Street. Drive approximately two miles then take a left onto Northeast 29th Avenue. Go almost one mile and the site will be on the left (west) side of the road. There are two gates with parking pads to park at.

Gee Creek Riparian Area: Head south on Interstate 5. Make sure you are in the far left hand lane as you approach Exit #11. Just as the off-ramp approaches on your right, pull off to the left into the median to park, using the shoulder to slow down. The site is located in the median of the freeway.

Appendix 3 – Data Tables

Table 1. Proposed mitigation acreage and components (from WSDOT 2006)

Mitigation Type	Johnson site (primary)	Gee Creek
Wetland creation	12.00 acres	
Wetland enhancement	5.20 acres	
Wetland/riparian buffer creation	16.90 acres	10 acres
Existing forest area – targeted underplanting	5.70 acres	
Total Areas	39.80 acres	10 acres

Table 2. Hydrology Observations

Date	Surface Observations	Hydrology Site #	Water Level (inches below soil surface unless otherwise noted)
March 11, 2014	All intended areas inundated to 18 plus inches or saturated to the surface. Drift deposits and algal mat/crust present.	1	Saturated to the surface
		2	Saturated to the surface
		3	Saturated to the surface
		4	Saturated to the surface
April 2, 2014	Site mostly inundated.	1	Saturated to the surface
		2	Saturated to the surface
		3	Inundated to 1"
		4	Inundated to 2"
April 15, 2014	Surface cracks at wells 2 and 3, water marks, water-stained leaves, and algal mat/crust present.	1	12"
		2	No pit dug
		3	No pit dug
		4	Site not visited

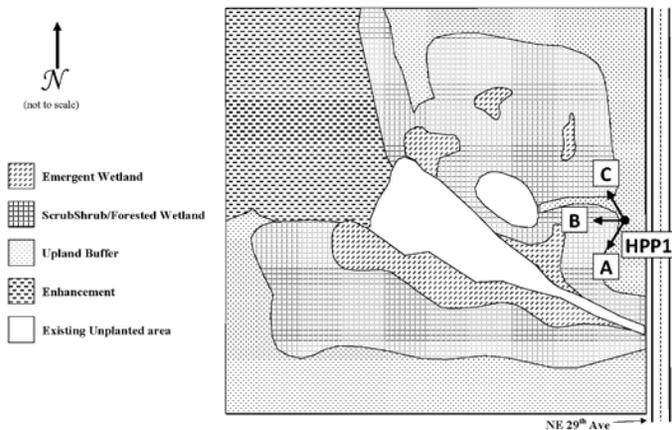
Table 3. Year 10 performance standards met in year 5

Performance Standards (for Johnson unless noted at Gee Creek)	2014 Results ³
Forested Wetland: minimum density of 300 living native trees per acre	775 trees/acre (CI _{80%} =557-992) (PFO&PSS combined)
Forested Wetland: at least two species of native trees and four species of native shrubs will be present in the forested area. No single species will provide more than 60% total aerial cover.	7 tree species and 11 shrub species; none >60% cover (PFO&PSS combined)
Scrub-Shrub: at least four species of native shrubs will be present in the Scrub Shrub area. No single species will provide more than 60% total aerial cover.	11 shrub species; none >60% cover (PFO&PSS combined)
Buffer: minimum density of 4,000 living native shrubs per acre	4,488 shrubs/acre (CI _{80%} =3,937-5,039)
Gee Creek Riparian Area: minimum density of 300 living native trees per acre	670 trees/acre (CI _{80%} = 549-791)
Gee Creek Riparian Area: minimum density of 3,000 living native shrubs per acre	5,313 shrubs/acre (CI _{80%} =4,385-6,241)
Gee Creek Riparian Area: at least two species of native trees and four species of native shrubs will be present in the forested area. No single species will provide more than 60% total aerial cover.	6 tree species and 16 shrub species
The aerial extent of blackberry species and Class A noxious weeds will not exceed 15% in the combined emergent, scrub shrub, forest, and buffer planting areas of the Johnson mitigation site. Japanese Knotweed shall not be present in any amount within the mitigation site.	<1% cover of blackberries and Class A noxious weeds: no Japanese knotweed observed
The aerial extent of reed canary grass will not exceed 20% in the combined emergent, scrub shrub, forest, and buffer planting areas of the Johnson mitigation site.	<5% cover of reed canary grass

³ All minimum density performance standards are less stringent for year 10 than year five for both sites, however these results exceed both year 10 and year 5 values.

Appendix 4 – Hydrology Photo Points

The photographs below were taken from locations approximate to the 2012 permanent photo-points on March 11, and April 15, 2014 and document the extent of seasonal ponding.



2012 Hydrology Photo Point Map



Hydrology Photo Point 1a



Hydrology Photo Point 1b



Hydrology Photo Point 1c

Appendix 5 – Wetland Delineation Report

WETLAND DELINEATION REPORT

I-5 Johnson Farm Mitigation Site

I-5/SR-502 Interchange
USACE IP 200501249
Ecology Water Quality Certification Order 3382

Clark County, Washington

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

November 2014



Introduction

This report was prepared by the Washington State Department of Transportation (WSDOT) to describe the wetland boundary delineation for the I-5 Johnson Farm mitigation site. Field work was conducted by WSDOT wetland biologists Tatiana Dreisbach, Tony Bush, Doug Littauer, and Kristen Andrews, on April 28 and 29, 2014. The delineation identifies 22.76 acres of wetland within the mitigation site boundaries.

General Information for the I-5 Johnson Farm mitigation site		
Location:	S35, T4N, R1E. Clark County. (Vicinity map, Figure 1)	
	USACE IP Number	200501249
	Long./Lat. ID Number	1226411457911
	Land Resource Region (LRR)	A
	Major Land Resource Area (MLRA)	2
	Construction Date	2008
	Monitoring Period	2010 - 2019
	Year of Monitoring	5 of 10 (in 2014)
Area of Project Impact¹	6.42 acres	
Total Delineated Wetland Area	22.76 acres	

¹ Project impact numbers from USACE Public Notice of Application for Permit (USACE 2006).

Location



Figure 1. Vicinity Map

Methods

Wetland boundaries within the I-5 Johnson Farm 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.

Mitigation sites are recognized as difficult wetland situations in the regional supplements and may have problematic hydric soils or lack one of the other factors (USACE 2010). Wetland determination data forms provide a rationale for the delineated boundary when one or more of the factors are problematic. Newly forming wetland soils were problematic in some locations on this site (Appendix A).

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). Wetland preservation areas are present within the mitigation site boundary and were included in this delineation.

Wetlands

The I-5 Johnson Farm mitigation site has depressional and slope wetland areas with a variety of Cowardin classes. Palustrine aquatic bed (PAB), palustrine emergent (PEM), palustrine scrub-shrub (PSS), and palustrine forested (PFO) communities characterize the wetland vegetation. The northwest corner of the site is a slope wetland with a PFO community occurring in wetland preservation areas. Wetland establishment areas are depressional with a mix of young PSS and PEM communities establishing. A PAB community is present around the edges of the preexisting pond in the central portion of the site. Some areas in the northeast portion of the wetland are possibly wetter than intended. These areas may establish a PEM community over time; replacing the intended PSS community.

The delineation determined 22.76 acres of wetland were present within the I-5 Johnson Farm mitigation site. Delineation data were collected at eleven sampling points and recorded on wetland determination data forms (Appendix A). Paired wetland and upland sample points were used to define the wetland edge. Additional wetland sample points characterize various wetland vegetation communities. Data recorded on wetland determination data forms characterize typical wetland and upland conditions observed on site. Vegetation, soils, and hydrology were examined in many additional sampling locations to determine the wetland boundary.

Precipitation

The Regional Delineation Supplement Version 2.0 (USACE 2010) recommends using methods described in Chapter 19 in *Engineering Field Handbook* (NRCS 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. When considering the three prior months as whole wetter than normal precipitation conditions were present prior to field work. All of the three months prior to field work were wetter than normal (Appendix B-1).

Moderate to heavy 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:

- Vegetative portions of herbaceous plants were present and some early blooming grasses and forbs were in flower.
- Leaves on woody species were partially or fully emerged.

GPS Data - I 5 / SR 502 Interchange, 4/28/2014

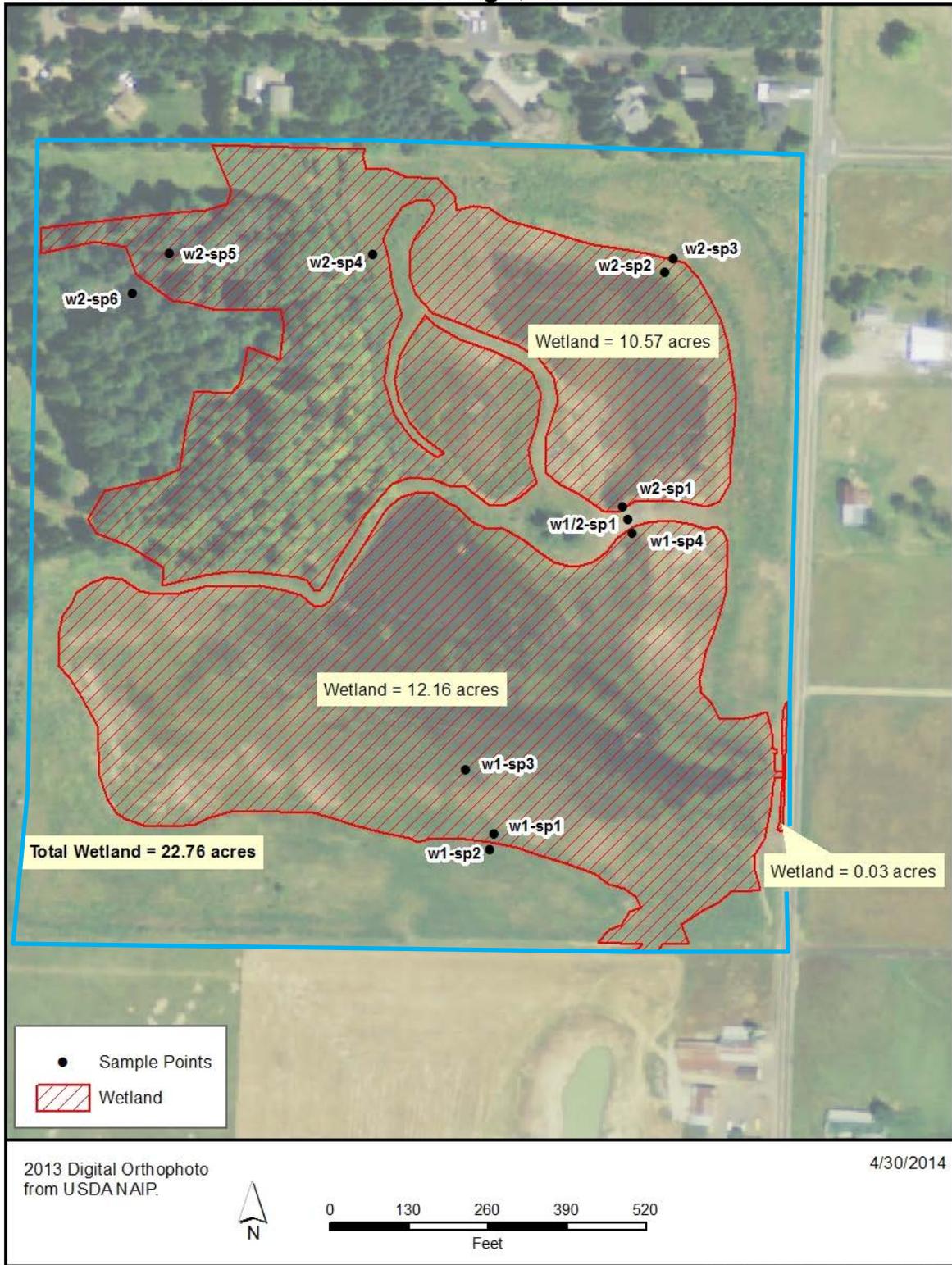


Figure 2. Study area in blue, wetland boundary in red, and sampling point locations in black.

I-5 Johnson Farm Mitigation Site – Wetland Delineation Summary		
Total Delineated Wetland Area	22.76 acres	
	Wetland Determination Data Form(s)	Appendix A; Sampling Points W1-SP1, W1-SP3, W1-SP4, W2-SP1 W2-SP2, W2-SP4, W2-SP5
	Upland Determination Data Form(s)	Appendix A; Sampling Point W1-SP2 and W1/2-SP1, W2-SP3, W2-SP6
	Delineator(s)	Tatiana Dreisbach, Tony Bush, Doug Littauer, Kristen Andrews
	Delineation Date	April 28 and 29, 2014
Vegetation	Trees – bigleaf maple (<i>Acer macrophyllum</i>), western red cedar (<i>Thuja plicata</i>), red alder (<i>Alnus rubra</i>) Shrubs – redosier dogwood (<i>Cornus alba</i>), Oregon ash (<i>Fraxinus latifolia</i>), Sitka willow (<i>Salix sitchensis</i>), Hooker's willow (<i>Salix hookeriana</i>), Nootka rose (<i>Rosa nutkana</i>), Pacific crabapple (<i>Malus fusca</i>), black cottonwood (<i>Populus balsamifera</i>) Herbs – slough sedge (<i>Carex obnupta</i>), tufted hairgrass (<i>Deschampsia caespitosa</i>), common velvetgrass (<i>Holcus lanatus</i>), broadleaf cattail (<i>Typha latifolia</i>), bird's-foot trefoil (<i>Lotus corniculatus</i>), marsh seedbox (<i>Ludwigia palustris</i>), needle spikerush (<i>Eleocharis acicularis</i>), common spikerush (<i>Eleocharis palustris</i>), swamp smartweed (<i>Persicaria hydropiperoides</i>), mannagrasses (<i>Glyceria spp</i>), soft rush (<i>Juncus effusus</i>)	
Soils	Soils examined to a depth of 20 inches exhibited hydric characteristics. Various matrix colors were observed with redoximorphic concentrations and depletions in some layers. Indicator Depleted Matrix (F3) and Redox Dark Surface (F6) met in some areas. In other newly developing wetland areas, hydric soil indicators were not observed, however, hydric soil features were observed and hydric soil indicators will likely continue to form.	
Hydrology	Moderate to heavy rains occurred in the 10 days preceding field work (Appendix B-2). Water in observation pits ranged from 0 inches (at the soil surface) to 12 inches below the surface. Surface water of varying depths was observed in some areas. Hydrology on this site is a combination of precipitation perching on fine textured soils, a high groundwater table, and slope wetland hydrology in the forested wetland preserve. Water control structures were part of the mitigation site design and influence surface water movement through the site.	
Rationale for Delineation	Positive indicators of all three wetland criteria are present. Placement of boundary determined by vegetation, hydrology indicators, and topographic break. The forested preserve area is a wetland/upland mosaic with wetland criteria present in lower areas and upland conditions present surrounding tree bases and higher elevations of the undulating topography.	

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

1. Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Vicksburg (MS): US Army Engineer Waterways Experiment Station. Technical Report Y-87-1. Available from: <http://el.erd.c.usace.army.mil/elpubs/pdf/wlman87.pdf>
2. Lichvar RW, Kartesz JT. 2013. North American Digital Flora: National Wetland Plant List (US), version 3.1 [Internet]. Hanover (NH): US Army Corps of Engineers, Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory and Chapel Hill (NC): BONAP. [cited 2014 Nov 3]. Available from: http://wetland_plants.usace.army.mil
3. [NRCS] Natural Resource Conservation Service. 1997. Hydrology Tools for wetland determination. Chapter 19 in Engineering Field Handbook. Fort Worth (TX): US. Department of Agriculture, NRCS. <http://www.wsdot.wa.gov/NR/rdonlyres/0685A8C8-0512-4568-BE7F-6FF6D75C15ED/0/WetDelinCh19.pdf>
4. [NRCS] Natural Resources Conservation Service [Internet]. 2014. Field Office Technical Guide. US Department of Agriculture. Climate Data for Clark County, Station Battle Ground, Washington 450482. [cited 2014 Nov 3]. Available at: http://efotg.sc.egov.usda.gov/efotg_locator.aspx
5. [NRCS] Natural Resource Conservation Service [Internet]. 2014. Web Soil Survey for Clark County, Washington. US Department of Agriculture. [cited 2014 Nov 3]. Available at: <http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>
6. [USACE] US Army Corps of Engineers. 2006. Public Notice of Application for Permit, Permit Number 200501249. P.1.
7. [USACE] US Army Corps of Engineers. 2010. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0), ed. Wakeley JS, Lichvar RW, Noble CV, editors. Vicksburg (MS): US Army Engineer Research and Development Center. ERDC/EL TR-10-3. Available at: http://www.usace.army.mil/Portals/2/docs/civilworks/regulatory/reg_supp/west_mt_finals_upp.pdf
8. [WSDOT] Washington State Department of Transportation. 2006. I-5/SR-502 Interchange Final Wetland Mitigation Plan USACE Addendum August 8, 2006, Clark County Addendum November 2006. Vancouver (WA): Washington State Department of Transportation, Southwest Region.
9. [WSDOT] Washington State Department of Transportation. 2014. Wetland Delineation and Assessment [Internet]. Olympia (WA): Environmental Services Office. [cited 2014 Nov 3]. Available at: <http://www.wsdot.wa.gov/Environment/Wetlands/Delineation.htm>

Appendix A —Wetland Determination Data Forms

Wetland Delineation Data Forms for:

W1-SP1

W1-SP2

W1-SP3

W1-SP4

W1/2-SP1

W2-SP1

W2-SP2

W2-SP3

W2-SP4

W2-SP5

W2-SP6

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

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

Project/Site: 005 Johnson Farm City/County: n/a / Clark Sampling Date: 28-Apr-14
 Applicant/Owner: WSDOT State: Wa Sampling Point: w1-sp1
 Investigator(s): Kristen Andrews, Doug Littaeur Section, Township, Range: S 35 T 4N R 1E
 Landform (hillslope, terrace, etc.): toe of slope Local relief (concave, convex, none): concave Slope: 2.0 % / 2.0 °
 Subregion (LRR): LRR A Lat.: 45.791 Long.: -122.643 Datum: NAD83HARN
 Soil Map Unit Name: Gee Silt Loam, 0 to 8 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
 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:
 Wetter than normal conditions were present in the three month period preceding the delineation (Appendix A-1), however assessment of wetland hydrology indicators was not naturally problematic during the delineation.

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Rel.Strat. Cover	Indicator Status		
Tree Stratum (Plot size: <u>15 x 15 feet</u>)					
1. _____	0	<input type="checkbox"/> 0.0%	_____	Dominance Test worksheet: Number of Dominant Species That are OBL, FACW, or FAC: <u>5</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>100.0%</u> (A/B)	
2. _____	0	<input type="checkbox"/> 0.0%	_____		
3. _____	0	<input type="checkbox"/> 0.0%	_____		
4. _____	0	<input type="checkbox"/> 0.0%	_____		
= Total Cover					
Sapling/Shrub Stratum (Plot size: <u>10 x 10 feet</u>)					
1. <u>Cornus alba</u>	15	<input checked="" type="checkbox"/> 75.0%	FACW	Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species <u>50</u> x 1 = <u>50</u> FACW species <u>38</u> x 2 = <u>76</u> FAC species <u>22</u> x 3 = <u>66</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>110</u> (A) <u>192</u> (B) Prevalence Index = B/A = <u>1.745</u>	
2. <u>Fraxinus latifolia</u>	5	<input checked="" type="checkbox"/> 25.0%	FACW		
3. _____	0	<input type="checkbox"/> 0.0%	_____		
4. _____	0	<input type="checkbox"/> 0.0%	_____		
5. _____	0	<input type="checkbox"/> 0.0%	_____		
= Total Cover					
Herb Stratum (Plot size: <u>5 x 5 feet</u>)					
1. <u>Carex obnupta</u>	45	<input checked="" type="checkbox"/> 50.0%	OBL		
2. <u>Holcus lanatus</u>	15	<input checked="" type="checkbox"/> 16.7%	FAC		
3. <u>Typha latifolia</u>	5	<input type="checkbox"/> 5.6%	OBL		
4. <u>Deschampsia caespitosa</u>	15	<input checked="" type="checkbox"/> 16.7%	FACW		
5. <u>Epilobium ciliatum</u>	3	<input type="checkbox"/> 3.3%	FACW		
6. <u>Lotus corniculatus</u>	5	<input type="checkbox"/> 5.6%	FAC		
7. <u>Cardamine oligosperma</u>	2	<input type="checkbox"/> 2.2%	FAC		
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%	_____		
= Total Cover					
Woody Vine Stratum (Plot size: <u>5 x 5 feet</u>)					
1. _____	_____	<input type="checkbox"/> 0.0%	_____		
2. _____	_____	<input type="checkbox"/> 0.0%	_____		
= Total Cover					
% Bare Ground in Herb Stratum: <u>10</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:
 As shrubs continue to establish and provide more cover this location is anticipated to evolve into scrub-shrub.

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		
0-20	2.5Y	6/2	55					Silty Clay Loam	two matrix colors due to newly forming wetland soils
	10YR	4/3	30	2.5Y	4/1	10	D	PL/M	
				10YR	5/6	5	C	M	

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:
 There were two matrix colors in this soil pit. One of the matrix colors, 2.5Y 6/2, meets requirements for depleted matrix but is not a high enough percentage of the soil profile to meet indicator F3. This is a newly forming wetland soil resulting from creation of the mitigation site. F3 will likely be met over time in this location. Soils meet definition of a hydric soil due to prolonged saturation during the growing season.

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 <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 checked="" type="radio"/> No <input type="radio"/>	Depth (inches): <input type="text"/>	

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

Remarks:
 The soil surface is saturated and the soil is dry below. Water is coming into pit at approx 9 inches below soil surface and filling pit. Water is pooling at 17 inches and rising in pit. The soils have fine particles that may inhibit infiltration throughout the soil profile. Saturation in the soil pit was observed at different levels.

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

Project/Site: 005 Johnson Farm City/County: n/a / Clark Sampling Date: 28-Apr-14
 Applicant/Owner: WSDOT State: Wa Sampling Point: w1-sp2
 Investigator(s): Kristen Andrews, Doug Littaeur Section, Township, Range: S 35 T 4N R 1E
 Landform (hillslope, terrace, etc.): slope Local relief (concave, convex, none): none Slope: 30.0 % / 16.7 °
 Subregion (LRR): LRR A Lat.: 45.791 Long.: -122.643 Datum: NAD83HARN
 Soil Map Unit Name: Gee Silt Loam, 0 to 8 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
 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:
 Wetter than normal conditions were present in the three month period preceding the delineation (Appendix A-1), however assessment of wetland hydrology indicators was not naturally problematic during the delineation.

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Rel.Strat. Cover	Indicator Status		
Tree Stratum (Plot size: <u>15 x 15 feet</u>)					
1. _____	_____	<input type="checkbox"/> 0.0%	_____	Dominance Test worksheet: Number of Dominant Species That are OBL, FACW, or FAC: <u>1</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>50.0%</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. <u>Symphoricarpos albus</u>	75	<input checked="" type="checkbox"/> 78.9%	FACU	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>75</u> x 2 = <u>150</u> FAC species <u>30</u> x 3 = <u>90</u> FACU species <u>95</u> x 4 = <u>380</u> UPL species <u>0</u> x 5 = <u>0</u> Column Total s: <u>200</u> (A) <u>620</u> (B) Prevalence Index = B/A = <u>3.100</u>	
2. <u>Amelanchier alnifolia</u>	15	<input type="checkbox"/> 15.8%	FACU		
3. <u>Quercus garryana</u>	5	<input type="checkbox"/> 5.3%	FACU		
4. _____	0	<input type="checkbox"/> 0.0%	_____		
5. _____	0	<input type="checkbox"/> 0.0%	_____		
	95	= Total Cover			
Herb Stratum (Plot size: <u>5 x 5 feet</u>)					
1. <u>Phalaris arundinacea</u>	75	<input checked="" type="checkbox"/> 71.4%	FACW		
2. <u>Cirsium arvense</u>	5	<input type="checkbox"/> 4.8%	FAC		
3. <u>Lotus corniculatus</u>	10	<input type="checkbox"/> 9.5%	FAC		
4. <u>Holcus lanatus</u>	10	<input type="checkbox"/> 9.5%	FAC		
5. <u>Cardamine oligosperma</u>	5	<input type="checkbox"/> 4.8%	FAC		
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%	_____		
	105	= Total Cover			
Woody Vine Stratum (Plot size: <u>5 x 5 feet</u>)					
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:

*Indicator 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	Loc ²		
0-16	10YR	4/3	60	7.5YR	3/4	25	C	M	Silty Clay Loam
				10YR	5/4	15	D	M	

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 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 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 type="radio"/> No <input checked="" 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:
no hydrology present.

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

Project/Site: 005 Johnson Farm City/County: n/a / Clark Sampling Date: 28-Apr-14
 Applicant/Owner: WSDOT State: Wa Sampling Point: w1-sp3
 Investigator(s): Kristen Andrews, Doug Littaeur Section, Township, Range: S 35 T 4N R 1E
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): none Slope: 5.0 % / 2.9 °
 Subregion (LRR): LRR A Lat.: 45.791 Long.: -122.643 Datum: NAD83HARN
 Soil Map Unit Name: Gee Silt Loam, 0 to 8 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
 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:
 Wetter than normal conditions were present in the three month period preceding the delineation (Appendix A-1), however assessment of wetland hydrology indicators was not naturally problematic during the delineation.

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Rel.Strat. Cover	Indicator Status		
Tree Stratum (Plot size: <u>15 x 15 feet</u>)					
1. _____	0	<input type="checkbox"/> 0.0%	_____	Dominance Test worksheet: Number of Dominant Species That are OBL, FACW, or FAC: <u>5</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>100.0%</u> (A/B)	
2. _____	0	<input type="checkbox"/> 0.0%	_____		
3. _____	0	<input type="checkbox"/> 0.0%	_____		
4. _____	0	<input type="checkbox"/> 0.0%	_____		
= Total Cover					
Sapling/Shrub Stratum (Plot size: <u>10 x 10 feet</u>)					
1. <u>Salix sitchensis</u>	20	<input checked="" type="checkbox"/> 43.5%	FACW	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species <u>78</u> x 1 = <u>78</u> FACW species <u>48</u> x 2 = <u>96</u> FAC species <u>3</u> x 3 = <u>9</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>129</u> (A) <u>183</u> (B) Prevalence Index = B/A = <u>1.419</u>	
2. <u>Salix hookeriana</u>	20	<input checked="" type="checkbox"/> 43.5%	FACW		
3. <u>Rosa nutkana</u>	3	<input type="checkbox"/> 6.5%	FAC		
4. <u>Malus fusca</u>	3	<input type="checkbox"/> 6.5%	FACW		
5. _____	0	<input type="checkbox"/> 0.0%	_____		
= Total Cover					
Herb Stratum (Plot size: <u>5 x 5 feet</u>)					
1. <u>Carex obnupta</u>	20	<input checked="" type="checkbox"/> 24.1%	OBL		
2. <u>Ludwigia palustris</u>	20	<input checked="" type="checkbox"/> 24.1%	OBL		
3. <u>Eleocharis acicularis</u>	10	<input type="checkbox"/> 12.0%	OBL		
4. <u>Juncus effusus</u>	5	<input type="checkbox"/> 6.0%	FACW		
5. <u>Persicaria hydropiperoides</u>	25	<input checked="" type="checkbox"/> 30.1%	OBL		
6. <u>Typha latifolia</u>	3	<input type="checkbox"/> 3.6%	OBL		
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%	_____		
= Total Cover					
Woody Vine Stratum (Plot size: <u>5 x 5 feet</u>)					
1. _____	_____	<input type="checkbox"/> 0.0%	_____		
2. _____	_____	<input type="checkbox"/> 0.0%	_____		
= Total Cover					
% Bare Ground in Herb Stratum: <u>17</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:

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

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

Project/Site: I-5 Johnson Farm City/County: n/a / Clark Sampling Date: 07-Apr-14
 Applicant/Owner: WSDOT State: WA Sampling Point: w1-sp4
 Investigator(s): Tatiana Dreisbach, Doug Littauer Section, Township, Range: S 35 T 4N R 1E
 Landform (hillslope, terrace, etc.): toe of slope Local relief (concave, convex, none): concave Slope: 5.0 % / 2.9 °
 Subregion (LRR): LRR A Lat.: 45.793 Long.: -122.642 Datum: NAD83HARN
 Soil Map Unit Name: Gee silt loam, 0 to 8 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
 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:
 Wetter than normal conditions were present in the three month period preceding the delineation (Appendix A-1), however assessment of wetland hydrology indicators was not naturally problematic during the delineation.

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Rel.Strat. Cover	Indicator Status		
Tree Stratum (Plot size: 15 x 15 feet)					
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: 15 x 15 feet)					
1. Salix sitchensis	25	<input checked="" type="checkbox"/> 78.1%	FACW	Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species <u>10</u> x 1 = <u>10</u> FACW species <u>59</u> x 2 = <u>118</u> FAC species <u>9</u> x 3 = <u>27</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>78</u> (A) <u>155</u> (B) Prevalence Index = B/A = <u>1.987</u>	
2. Rosa nutkana	5	<input type="checkbox"/> 15.6%	FAC		
3. Malus fusca	2	<input type="checkbox"/> 6.3%	FACW		
4. _____	0	<input type="checkbox"/> 0.0%	_____		
5. _____	0	<input type="checkbox"/> 0.0%	_____		
32 = Total Cover					
Herb Stratum (Plot size: 5 x 5 feet)					
1. Glyceria spp.	30	<input checked="" type="checkbox"/> 56.6%	FACW		
2. Carex spp.	5	<input type="checkbox"/> 9.4%	_____		
3. Juncus spp.	2	<input type="checkbox"/> 3.8%	_____		
4. Ludwigia palustris	5	<input type="checkbox"/> 9.4%	OBL		
5. Festuca arundinacea	2	<input type="checkbox"/> 3.8%	FAC		
6. Holcus lanatus	2	<input type="checkbox"/> 3.8%	FAC		
7. Persicaria hydropiperoides	5	<input type="checkbox"/> 9.4%	OBL		
8. Phalaris arundinacea	2	<input type="checkbox"/> 3.8%	FACW		
9. _____	0	<input type="checkbox"/> 0.0%	_____		
10. _____	0	<input type="checkbox"/> 0.0%	_____		
11. _____	0	<input type="checkbox"/> 0.0%	_____		
53 = Total Cover					
Woody Vine Stratum (Plot size: 5 x 5 feet)					
1. _____	_____	<input type="checkbox"/> 0.0%	_____		
2. _____	_____	<input type="checkbox"/> 0.0%	_____		
0 = Total Cover					
% Bare Ground in Herb Stratum: <u>47</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:
 The Glyceria species is not known, however all Glyceria species common to western Washington are hydrophytic. For the dominance test calculations we are assuming the observed Glyceria is FACW or wetter (see hydrology section).

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

Soil

Sampling Point: W1-sp4

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			
0-6	10YR	4/2	90	7.5YR	4/6	10	C	M/PL	Silt Loam	concentration is prominent
6-20	10YR	3/4	80	10YR	4/6	20	C	M	Silt Loam	concentration is distinct

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 checked="" 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 checked="" 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 checked="" 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 <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 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: I-5 Johnson Farm City/County: n/a / Clark Sampling Date: 07-Apr-14
 Applicant/Owner: WSDOT State: WA Sampling Point: w1/2-sp1
 Investigator(s): Tatiana Dreisbach, Doug Littauer Section, Township, Range: S 35 T 4N R 1E
 Landform (hillslope, terrace, etc.): berm Local relief (concave, convex, none): convex Slope: 5.0 % / 2.9 °
 Subregion (LRR): LRR A Lat.: 45.794 Long.: -122.642 Datum: NAD83HARN
 Soil Map Unit Name: Gee silt loam, 0 to 8 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
 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 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:
 Wetter than normal conditions were present in the three month period preceding the delineation (Appendix A-1), however assessment of wetland hydrology indicators was not naturally problematic during the delineation.

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Rel.Strat. Cover	Indicator Status		
Tree Stratum (Plot size: <u>15 x 15 feet</u>)					
1. _____	_____	<input type="checkbox"/> 0.0%	_____	Dominance Test worksheet: Number of Dominant Species That are OBL, FACW, or FAC: <u>4</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>80.0%</u> (A/B)	
2. _____	_____	<input type="checkbox"/> 0.0%	_____		
3. _____	_____	<input type="checkbox"/> 0.0%	_____		
4. _____	_____	<input type="checkbox"/> 0.0%	_____		
= Total Cover					
Sapling/Shrub Stratum (Plot size: <u>15 x 15 feet</u>)					
1. <u>Symphoricarpos albus</u>	15	<input checked="" type="checkbox"/> 62.5%	FACU	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>7</u> x 2 = <u>14</u> FAC species <u>32</u> x 3 = <u>96</u> FACU species <u>27</u> x 4 = <u>108</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>66</u> (A) <u>218</u> (B) Prevalence Index = B/A = <u>3.303</u>	
2. <u>Fraxinus latifolia</u>	5	<input checked="" type="checkbox"/> 20.8%	FACW		
3. <u>Cornus alba</u>	2	<input type="checkbox"/> 8.3%	FACW		
4. <u>Frangula purshiana</u>	2	<input type="checkbox"/> 8.3%	FAC		
5. _____	0	<input type="checkbox"/> 0.0%	_____		
= Total Cover					
Herb Stratum (Plot size: <u>5 x 5 feet</u>)					
1. <u>Holcus lanatus</u>	10	<input checked="" type="checkbox"/> 23.8%	FAC		
2. <u>Agrostis capillaris</u>	10	<input checked="" type="checkbox"/> 23.8%	FAC		
3. <u>Lotus corniculatus</u>	10	<input checked="" type="checkbox"/> 23.8%	FAC		
4. <u>Plantago lanceolata</u>	2	<input type="checkbox"/> 4.8%	FACU		
5. <u>Daucus carota</u>	5	<input type="checkbox"/> 11.9%	FACU		
6. <u>Hypochaeris radicata</u>	5	<input type="checkbox"/> 11.9%	FACU		
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%	_____		
= Total Cover					
Woody Vine Stratum (Plot size: <u>5 x 5 feet</u>)					
1. _____	_____	<input type="checkbox"/> 0.0%	_____		
2. _____	_____	<input type="checkbox"/> 0.0%	_____		
= Total Cover					
% Bare Ground in Herb Stratum: <u>58</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:

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

Soil

Sampling Point: w1/2-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		
0-16	10YR	4/4	75	10YR	5/6	5	C	M	Silty Clay Loam
				10YR	5/2	20	D	M	

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 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 indicators lacking in this location.

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 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 type="radio"/> No <input checked="" 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:

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

Project/Site: I-5 Johnson Farm City/County: n/a / Clark Sampling Date: 07-Apr-14
 Applicant/Owner: WSDOT State: WA Sampling Point: w2-sp1
 Investigator(s): Tatiana Dreisbach, Doug Littauer Section, Township, Range: S 35 T 4N R 1E
 Landform (hillslope, terrace, etc.): slope of a depression Local relief (concave, convex, none): concave Slope: 10.0 % / 5.7 °
 Subregion (LRR): LRR A Lat.: 45.793 Long.: -122.642 Datum: NAD83HARN
 Soil Map Unit Name: Gee silt loam, 0 to 8 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
 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:
 Wetter than normal conditions were present in the three month period preceding the delineation (Appendix A-1), however assessment of wetland hydrology indicators was not naturally problematic during the delineation.

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Rel.Strat. Cover	Indicator Status		
Tree Stratum (Plot size: 15 x 15 feet)					
1. _____	_____	<input type="checkbox"/> 0.0%	_____	Dominance Test worksheet: Number of Dominant Species That are OBL, FACW, or FAC: <u>6</u> (A) Total Number of Dominant Species Across All Strata: <u>8</u> (B) Percent of dominant Species That Are OBL, FACW, or FAC: <u>75.0%</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: 10 x 5 feet)					
1. Symphoricarpos albus	5	<input checked="" type="checkbox"/> 29.4%	FACU	Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species <u>67</u> x 1 = <u>67</u> FACW species <u>5</u> x 2 = <u>10</u> FAC species <u>17</u> x 3 = <u>51</u> FACU species <u>7</u> x 4 = <u>28</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>96</u> (A) <u>156</u> (B) Prevalence Index = B/A = <u>1.625</u>	
2. Populus balsamifera	5	<input checked="" type="checkbox"/> 29.4%	FAC		
3. Cornus alba	5	<input checked="" type="checkbox"/> 29.4%	FACW		
4. Frangula purshiana	2	<input type="checkbox"/> 11.8%	FAC		
5. _____	0	<input type="checkbox"/> 0.0%	_____		
	17	= Total Cover			
Herb Stratum (Plot size: 5 x 5 feet)					
1. Eleocharis acicularis	40	<input checked="" type="checkbox"/> 44.9%	OBL		
2. Eleocharis palustris	10	<input checked="" type="checkbox"/> 11.2%	OBL		
3. Lythrum portula	10	<input checked="" type="checkbox"/> 11.2%	OBL		
4. Sparganium angustifolium	5	<input type="checkbox"/> 5.6%	OBL		
5. Glyceria spp.	10	<input checked="" type="checkbox"/> 11.2%	_____		
6. Lotus corniculatus	10	<input checked="" type="checkbox"/> 11.2%	FAC		
7. Persicaria hydropiperoides	2	<input type="checkbox"/> 2.2%	OBL		
8. Anthoxanthum odoratum	2	<input type="checkbox"/> 2.2%	FACU		
9. _____	0	<input type="checkbox"/> 0.0%	_____		
10. _____	0	<input type="checkbox"/> 0.0%	_____		
11. _____	0	<input type="checkbox"/> 0.0%	_____		
	89	= Total Cover			
Woody Vine Stratum (Plot size: 5 x 5 feet)					
1. _____	_____	<input type="checkbox"/> 0.0%	_____		
2. _____	_____	<input type="checkbox"/> 0.0%	_____		
	0	= Total Cover			
% Bare Ground in Herb Stratum: <u>11</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:
 As shrubs continue to establish and provide more cover this location is anticipated to evolve into scrub-shrub.

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

Soil

Sampling Point: w2-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		
0-12	7.5YR	4/6	70%	5YR	4/6	10	C	M	Silt Loam	concentration is faint
				5Y	7/1	20	D	M		
12-20	10YR	5/4	65	5YR	5/8	20	C	M	Silt Loam	
				10YR	5/8	10	C	M		
				5Y	6/1	5	D	M		

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:
 Soils are newly forming wetland soils on a year 5 mitigation site. Wetland hydrology and hydrophytic vegetation are present. Hydric soils are expected to form over time in this location following anticipated presence of wetland hydrology.

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 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 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:
 inundation present 5 feet from hole.

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

Project/Site: I-5 Johnson Farm City/County: n/a / Clark Sampling Date: 07-Apr-14
 Applicant/Owner: WSDOT State: WA Sampling Point: w2-sp2
 Investigator(s): Tatiana Dreisbach, Doug Littauer Section, Township, Range: S 35 T 4N R 1E
 Landform (hillslope, terrace, etc.): sope of depression Local relief (concave, convex, none): concave Slope: 5.0 % / 2.9 °
 Subregion (LRR): LRR A Lat.: 45.794 Long.: -122.642 Datum: NAD83HARN
 Soil Map Unit Name: Gee silt loam, 0 to 8 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
 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:
 Wetter than normal conditions were present in the three month period preceding the delineation (Appendix A-1), however assessment of wetland hydrology indicators was not naturally problematic during the delineation.

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Rel.Strat. Cover	Indicator Status		
Tree Stratum (Plot size: 15 x 15 feet)					
1. _____	_____	<input type="checkbox"/> 0.0%	_____	Dominance Test worksheet: Number of Dominant Species That are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>4</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%	_____		
= Total Cover					
0					
Sapling/Shrub Stratum (Plot size: 15 x 15 feet)					
1. Cornus alba	5	<input checked="" type="checkbox"/> 71.4%	FACW	Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species <u>69</u> x 1 = <u>69</u> FACW species <u>9</u> x 2 = <u>18</u> FAC species <u>5</u> x 3 = <u>15</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>83</u> (A) <u>102</u> (B) Prevalence Index = B/A = <u>1.229</u>	
2. Fraxinus latifolia	2	<input checked="" type="checkbox"/> 28.6%	FACW		
3. _____	0	<input type="checkbox"/> 0.0%	_____		
4. _____	0	<input type="checkbox"/> 0.0%	_____		
5. _____	0	<input type="checkbox"/> 0.0%	_____		
= Total Cover					
7					
Herb Stratum (Plot size: 5 x 5 feet)					
1. Carex obnupta	40	<input checked="" type="checkbox"/> 52.6%	OBL		
2. Eleocharis acicularis	20	<input checked="" type="checkbox"/> 26.3%	OBL		
3. Lotus corniculatus	5	<input type="checkbox"/> 6.6%	FAC		
4. Ludwigia palustris	2	<input type="checkbox"/> 2.6%	OBL		
5. Lythrum portula	2	<input type="checkbox"/> 2.6%	OBL		
6. Juncus ensifolius	2	<input type="checkbox"/> 2.6%	FACW		
7. Typha latifolia	5	<input type="checkbox"/> 6.6%	OBL		
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%	_____		
= Total Cover					
76					
Woody Vine Stratum (Plot size: 5 x 5 feet)					
1. _____	_____	<input type="checkbox"/> 0.0%	_____		
2. _____	_____	<input type="checkbox"/> 0.0%	_____		
= Total Cover					
0					
% Bare Ground in Herb Stratum: <u>24</u>					

Remarks:
 As shrubs continue to establish and provide more cover this location is anticipated to evolve into scrub-shrub.

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

Soil

Sampling Point: W2-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	Loc ²		
0-16	2.5Y	4/2	75	N	4/0	15	D	M/PL	concentration is prominent
				7.5YR	4/6	10	C	M/PL	concentration is 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 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 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 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 checked="" type="radio"/> No <input type="radio"/>	Depth (inches): <input type="text" value="10"/>	
Saturation Present? (includes capillary fringe)	Yes <input checked="" type="radio"/> No <input type="radio"/>	Depth (inches): <input type="text" value="5"/>	

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: I-5 Johnson Farm City/County: n/a / Clark Sampling Date: 07-Apr-14
 Applicant/Owner: WSDOT State: WA Sampling Point: w2-sp3
 Investigator(s): Tatiana Dreisbach, Doug Littauer Section, Township, Range: S 35 T 4N R 1E
 Landform (hillslope, terrace, etc.): sope of depression Local relief (concave, convex, none): concave Slope: 5.0 % / 2.9 °
 Subregion (LRR): LRR A Lat.: 45.794 Long.: -122.642 Datum: NAD83HARN
 Soil Map Unit Name: Gee silt loam, 0 to 8 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
 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:
 Wetter than normal conditions were present in the three month period preceding the delineation (Appendix A-1), however assessment of wetland hydrology indicators was not naturally problematic during the delineation.

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Rel.Strat. Cover	Indicator Status		
Tree Stratum (Plot size: 15 x 15 feet)					
1. _____	_____	<input type="checkbox"/> 0.0%	_____	Dominance Test worksheet: Number of Dominant Species That are OBL, FACW, or FAC: <u>1</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>50.0%</u> (A/B)	
2. _____	_____	<input type="checkbox"/> 0.0%	_____		
3. _____	_____	<input type="checkbox"/> 0.0%	_____		
4. _____	_____	<input type="checkbox"/> 0.0%	_____		
= Total Cover					
Sapling/Shrub Stratum (Plot size: 15 x 15 feet)					
1. Symphoricarpos albus	20	<input checked="" type="checkbox"/> 64.5%	FACU	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>0</u> x 2 = <u>0</u> FAC species <u>97</u> x 3 = <u>291</u> FACU species <u>33</u> x 4 = <u>132</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>130</u> (A) <u>423</u> (B) Prevalence Index = B/A = <u>3.254</u>	
2. Amelanchier alnifolia	5	<input type="checkbox"/> 16.1%	FACU		
3. Mahonia aquifolium	2	<input type="checkbox"/> 6.5%	FACU		
4. Quercus garryana	2	<input type="checkbox"/> 6.5%	FACU		
5. Corylus cornuta	2	<input type="checkbox"/> 6.5%	FACU		
= Total Cover					
Herb Stratum (Plot size: 5 x 5 feet)					
1. Holcus lanatus	80	<input checked="" type="checkbox"/> 76.9%	FAC		
2. Cirsium arvense	5	<input type="checkbox"/> 4.8%	FAC		
3. Lotus corniculatus	10	<input type="checkbox"/> 9.6%	FAC		
4. Vicia spp.	5	<input type="checkbox"/> 4.8%	_____		
5. Rumex acetosella	2	<input type="checkbox"/> 1.9%	FACU		
6. Rumex crispus	2	<input type="checkbox"/> 1.9%	FAC		
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%	_____		
= Total Cover					
Woody Vine Stratum (Plot size: 5 x 5 feet)					
1. _____	_____	<input type="checkbox"/> 0.0%	_____		
2. _____	_____	<input type="checkbox"/> 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:

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

Soil

Sampling Point: W2-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		
0-18	10YR	4/3	70	2.5Y	4/1	15	D	M	Silt Loam
				7.5YR	4/6	15	C	M	

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 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 indicators lacking in this location.

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 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 type="radio"/> No <input checked="" 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:

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

Project/Site: I-5 Johnson Farm City/County: n/a / Clark Sampling Date: 07-Apr-14
 Applicant/Owner: WSDOT State: WA Sampling Point: w2-sp4
 Investigator(s): Tatiana Dreisbach, Doug Littauer Section, Township, Range: S 35 T 4N R 1E
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope: 5.0 % / 2.9 °
 Subregion (LRR): LRR A Lat.: 45.794 Long.: -122.644 Datum: NAD83HARN
 Soil Map Unit Name: Odne silt loam, 0 to 5 percent slopes NWI classification: PEM

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 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:
 Wetter than normal conditions were present in the three month period preceding the delineation (Appendix A-1), however assessment of wetland hydrology indicators was not naturally problematic during the delineation.

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Rel.Strat. Cover	Indicator Status	
Tree Stratum (Plot size: 15 x 15 feet)				
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: 15 x 15 feet)				
1. _____	_____	<input type="checkbox"/> 0.0%	_____	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>10</u> x 2 = <u>20</u> FAC species <u>85</u> x 3 = <u>255</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>95</u> (A) <u>275</u> (B) Prevalence Index = B/A = <u>2.895</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: 5 x 5 feet)				
1. <i>Holcus lanatus</i>	50	<input checked="" type="checkbox"/> 52.6%	FAC	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. <i>Lotus corniculatus</i>	30	<input checked="" type="checkbox"/> 31.6%	FAC	
3. <i>Juncus effusus</i>	10	<input type="checkbox"/> 10.5%	FACW	
4. <i>Rumex crispus</i>	5	<input type="checkbox"/> 5.3%	FAC	
5. <i>Carex</i> spp.	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%	_____	
95 = Total Cover				
Woody Vine Stratum (Plot size: 5 x 5 feet)				
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>5</u>				

Remarks:

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

Soil

Sampling Point: w2-sp4

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		
0-5	10YR	4/1	50	10YR	5/1	15	D	M/PL	Silt Loam	
	10YR	4/3	30	5YR	3/4	5	C	M		
5-18	10YR	3/1	95	7.5YR	4/6	5	C	M/PL	Silt Loam	concentration is 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 type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)	³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<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)	

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

Hydric Soil Present? Yes No

Remarks:
 There were two matrix colors in the top layer. Neither of which meet an indicator. This is a newly forming wetland soil resulting from creation of the mitigation site. The lower layer meets F6.

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 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 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 checked="" type="radio"/> No <input type="radio"/>	Depth (inches): <input type="text" value="12"/>	
Saturation Present? (includes capillary fringe)	Yes <input checked="" type="radio"/> No <input type="radio"/>	Depth (inches): <input type="text" value="6"/>	

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: I-5 Johnson Farm City/County: n/a / Clark Sampling Date: 07-Apr-14
 Applicant/Owner: WSDOT State: WA Sampling Point: w2-sp5
 Investigator(s): Tatiana Dreisbach, Doug Littauer Section, Township, Range: S 35 T 4N R 1E
 Landform (hillslope, terrace, etc.): slope Local relief (concave, convex, none): undulating Slope: 5.0 % / 2.9 °
 Subregion (LRR): LRR A Lat.: 45.794 Long.: -122.645 Datum: NAD83HARN
 Soil Map Unit Name: Gee silt loam, 0 to 8 percent slopes NWI classification: PFO

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:
 See previous sheets on climatic comments. Note: This area of the wetland occurs on a mature forested slope with wetland mosaic. Undulating topography results in lower areas with wetland criteria and higher areas and bases of trees meeting upland conditions. This portion of the wetland has

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 20 x 20 feet)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status	Dominance Test worksheet:
1. Acer macrophyllum	60	<input checked="" type="checkbox"/> 75.0%	FACU	Number of Dominant Species That are OBL, FACW, or FAC: <u>3</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>60.0%</u> (A/B)
2. Thuja plicata	10	<input type="checkbox"/> 12.5%	FAC	
3. Alnus rubra	10	<input type="checkbox"/> 12.5%	FAC	
4. _____	0	<input type="checkbox"/> 0.0%		
80 = Total Cover				
Sapling/Shrub Stratum (Plot size: 15 x 15 feet)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status	Prevalence Index worksheet:
1. Oemleria cerasiformis	25	<input checked="" type="checkbox"/> 83.3%	FACU	Total % Cover of: _____ Multiply by: _____ OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>0</u> x 2 = <u>0</u> FAC species <u>118</u> x 3 = <u>354</u> FACU species <u>100</u> x 4 = <u>400</u> UPL species <u>10</u> x 5 = <u>50</u> Column Total s: <u>228</u> (A) <u>804</u> (B) Prevalence Index = B/A = <u>3.526</u>
2. Sambucus racemosa	5	<input type="checkbox"/> 16.7%	FACU	
3. _____	0	<input type="checkbox"/> 0.0%		
4. _____	0	<input type="checkbox"/> 0.0%		
5. _____	0	<input type="checkbox"/> 0.0%		
30 = Total Cover				
Herb Stratum (Plot size: 5 x 5 feet)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status	
1. Festuca arundinacea	30	<input checked="" type="checkbox"/> 25.4%	FAC	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrologic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is > 50% <input 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. Claytonia sibirica	30	<input checked="" type="checkbox"/> 25.4%	FAC	
3. Ranunculus repens	30	<input checked="" type="checkbox"/> 25.4%	FAC	
4. Phacelia hastata	10	<input type="checkbox"/> 8.5%	UPL	
5. Urtica dioica	5	<input type="checkbox"/> 4.2%	FAC	
6. Galium aparine	10	<input type="checkbox"/> 8.5%	FACU	
7. Thuja plicata	3	<input type="checkbox"/> 2.5%	FAC	
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%		
118 = Total Cover				
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status	
1. _____		<input type="checkbox"/> 0.0%		
2. _____		<input type="checkbox"/> 0.0%		
0 = Total Cover				
% Bare Ground in Herb Stratum: <u>0</u>				

Remarks:
 Wetland/upland mosaic. Episaturated conditions on a slope through mid-April. Saturation in upper part of soil profile appears to be influencing the herb community but not the trees and shrubs.

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

Soil

Sampling Point: w2-sp5

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			
0-9	10YR	3/2	95	5YR	4/4	5	C	M	Loam	concentration is prominent
9-16	10YR	4/3	100						Loam	

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 type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)	³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<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)	

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 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 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:
 episaturated conditions in slope wetland. saturated between 0 and 4 inches.

Remarks:
 Episaturated conditions in slope wetland. Saturated between 0 and 4 inches.

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

Project/Site: I-5 Johnson Farm City/County: n/a / Clark Sampling Date: 07-Apr-14
 Applicant/Owner: WSDOT State: WA Sampling Point: w2-sp6
 Investigator(s): Tatiana Dreisbach, Doug Littauer Section, Township, Range: S 35 T 4N R 1E
 Landform (hillslope, terrace, etc.): slope Local relief (concave, convex, none): undulating Slope: 5.0 % / 2.9 °
 Subregion (LRR): LRR A Lat.: 45.793 Long.: -122.646 Datum: NAD83HARN
 Soil Map Unit Name: Gee silt loam, 0 to 8 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
 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 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:
 Wetter than normal conditions were present in the three month period preceding the delineation (Appendix A-1), however assessment of wetland hydrology indicators was not naturally problematic during the delineation.

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Rel.Strat. Cover	Indicator Status	
Tree Stratum (Plot size: 20 x 20 feet)				
1. Acer macrophyllum	50	<input checked="" type="checkbox"/> 58.8%	FACU	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>5</u> (B) Percent of dominant Species That Are OBL, FACW, or FAC: <u>60.0%</u> (A/B)
2. Thuja plicata	30	<input checked="" type="checkbox"/> 35.3%	FAC	
3. Frangula purshiana	5	<input type="checkbox"/> 5.9%	FAC	
4. _____	0	<input type="checkbox"/> 0.0%		
	85	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15 x 15 feet)				
1. _____	0	<input type="checkbox"/> 0.0%		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>0</u> x 2 = <u>0</u> FAC species <u>87</u> x 3 = <u>261</u> FACU species <u>92</u> x 4 = <u>368</u> UPL species <u>0</u> x 5 = <u>0</u> Column Total s: <u>179</u> (A) <u>629</u> (B) Prevalence Index = B/A = <u>3.514</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%		
	0	= Total Cover		
Herb Stratum (Plot size: 5 x 5 feet)				
1. Festuca arundinacea	20	<input checked="" type="checkbox"/> 19.2%	FAC	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. Ranunculus repens	20	<input checked="" type="checkbox"/> 19.2%	FAC	
3. Galium aparine	20	<input checked="" type="checkbox"/> 19.2%	FACU	
4. Phacelia	10	<input type="checkbox"/> 9.6%		
5. Cerastium glomeratum	10	<input type="checkbox"/> 9.6%	FACU	
6. Claytonia perfoliata	2	<input type="checkbox"/> 1.9%	FAC	
7. Claytonia sibirica	5	<input type="checkbox"/> 4.8%	FAC	
8. Urtica dioica	5	<input type="checkbox"/> 4.8%	FAC	
9. Lapsana communis	2	<input type="checkbox"/> 1.9%	FACU	
10. Symphoricarpos albus	5	<input type="checkbox"/> 4.8%	FACU	
11. Sambucus racemosa	5	<input type="checkbox"/> 4.8%	FACU	
	104	= Total Cover		
Woody Vine Stratum (Plot size: 5 x 5 feet)				
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: w2-sp6

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		
0-3	10YR	3/2	100				Loam	
3-16	10YR	4/3	100				Loam	

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 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 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 type="radio"/> No <input checked="" 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:

Appendix B — Precipitation Data

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

Monthly precipitation data for Battle Ground, Washington.

		Long-term rainfall records ^a							
	Month	3 yrs. in 10 less than	Average	3 yrs. in 10 more than	Rain fall ^a	Condition dry, wet, normal ^b	Condition Value	Month weight value	Product of previous two columns
1 st prior month	Apr	3.08	4.24	5.00	5.28	W	3	3	9
2 nd prior month	Mar	4.30	5.52	6.38	8.28	W	3	2	6
3 rd prior month	Feb	4.11	5.92	7.04	7.46	W	3	1	3
								Sum	18

^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: Wetter than normal precipitation conditions were present prior to the field visit.

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

Date (2014)	Daily Precipitation (inches) ^a
Apr 28	0.22
Apr 27	0.51
Apr 26	0.17
Apr 25	0.23
Apr 24	0.87
Apr 23	0.43
Apr 22	0.39
Apr 21	0.00
Apr 20	0.17
Apr 19	0.00
Apr 18	0.41

^a NOAA 2014

Literature Cited

1. Corlett D. 2008. I-5/SR-502 Interchange Gee Creek Riparian Area Planting Plan. Vancouver (WA): Washington State Department of Transportation, Southwest Region.
2. Corlett D. 2009. I-5/SR-502 Interchange Johnson Wetland Mitigation Site As-built Planting Plan. Vancouver (WA): Washington State Department of Transportation, Southwest Region.
3. Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Vicksburg (MS): US Army Engineer Waterways Experiment Station. Technical Report Y-87-1. Available at: <http://el.erd.c.usace.army.mil/elpubs/pdf/wlman87.pdf>
4. [USACE] US Army Corps of Engineers. 2005. Department of the Army Individual Permit Number 200501249.
5. [USACE] US Army Corps of Engineers. 2010. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0), Wakeley JS, Lichvar RW, Noble CV, editors. Vicksburg (MS): US Army Engineer Research and Development Center. ERDC/EL TR-10-3. Available at: http://www.usace.army.mil/Portals/2/docs/civilworks/regulatory/reg_supp/west_mt_finalsupp.pdf
6. [WSDOT] Washington State Department of Transportation. 2006. I-5/SR-502 Interchange Final Wetland Mitigation Plan. Vancouver (WA): Washington State Department of Transportation, Southwest Region.
7. [WSDOT] Washington State Department of Transportation. 2008. WSDOT Wetland Mitigation Site Monitoring Methods. <http://www.wsdot.wa.gov/NR/rdonlyres/C211AB59-D5A2-4AA2-8A76-3D9A77E01203/0/MethodsWhitePaper052004.pdf>