

**WSDOT and City of Renton
Springbrook Creek Wetland and Habitat Mitigation Bank
Unit C**

USACE IP 200600100

Northwest Region

2014 MONITORING REPORT

Wetlands Program

Issued March 2015



**Washington State
Department of Transportation**

Environmental Services Office

Author:
Doug Littauer

Editor:
Tony Bush

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

For questions about the status of the bank, please contact Gretchen Lux at 360-704-6328 or by email at luxg@wsdot.wa.gov.

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

Springbrook Creek Wetland and Habitat Mitigation Bank Unit C

USACE IP 200600100



General Site Information	
USACE IP Number	200600100
Mitigation Location	Southwest Renton, King County
Unit C LLID Number	1222395474429
Monitoring Period	2010-2019
Year of Monitoring	5 of 10

This Page Intentionally Left Blank

Summary of Monitoring Results and Management Activities (2014)

Performance Standards	2014 Results ¹	Management Activities
At least 9.27 acres of wetland will be present within the Wetland Re Establishment area in Unit C.	Present	
The Forested Wetland Enhancement areas will contain at least 70 living native conifers per acre.	65 plants/acre (CI _{80%} = 45-86)	Replanted conifers in Jan 2015.
Native woody vegetation within the Wetland Tree/Shrub planting areas will provide at least 50% aerial cover.	98% cover (CI _{80%} = 97-99)	
At least 3 native woody species will provide at least 5% aerial cover each within the Wetland Tree/Shrub planting areas.	6 native woody species provide at least 5 percent cover	
Native woody vegetation within the Upland planting areas will provide at least 30% aerial cover.	92% cover (CI _{80%} = 88-96%)	
At least 3 native woody species will provide at least 3% aerial cover each within the Upland planting areas.	11 native woody species provide at least 3% cover	
Himalayan blackberry (<i>Rubus armeniacus</i>) will not cover more than 20% of the Forested Wetland Enhancement, Upland planting areas, and buffers at the site, and not more than 10% in the Wetland Re-Establishment Area. In Years 1 through 10, remove all Japanese knotweed (<i>Reynoutria japonica</i>), English ivy (<i>Hedera helix</i>), and purple loosestrife (<i>Lythrum salicaria</i>) identified within Unit C.	5% cover of Himalayan blackberry (qualitative)	1 weed control visit occurred in 2014

Report Introduction

This report summarizes fifth-year (Year-5) monitoring activities at the Unit C of the Springbrook Creek Wetland and Habitat Mitigation Bank. Included are a site description, the performance standards, an explanation of monitoring methods, and an evaluation of site development. Monitoring activities included vegetation surveys, photo-documentation, and a wetland delineation. The wetland delineation occurred on April 16 and 17 and November 24, 2014. Vegetation monitoring took place on July 28 and 29, 2014.

¹ Estimated values are presented with their corresponding statistical confidence interval. For example, 98% (CI_{80%} = 97-99% cover) means we are 80% confident that the true cover value is between 97% and 99%.

What is the Springbrook Creek Wetland and Habitat Mitigation Bank

This mitigation bank contains reestablished, rehabilitated, and enhanced wetlands as well as enhanced uplands and riparian areas adjacent to Springbrook Creek. Unit C (Figure 1) is 47.48 acres, of which 27.9 acres are pre-existing wetlands. The bank is operated and managed by WSDOT and the City of Renton. The purpose of the bank is to provide compensation for unavoidable impacts to wetlands and other aquatic resources caused by WSDOT highway construction projects and City of Renton mitigation requirements within the service area.

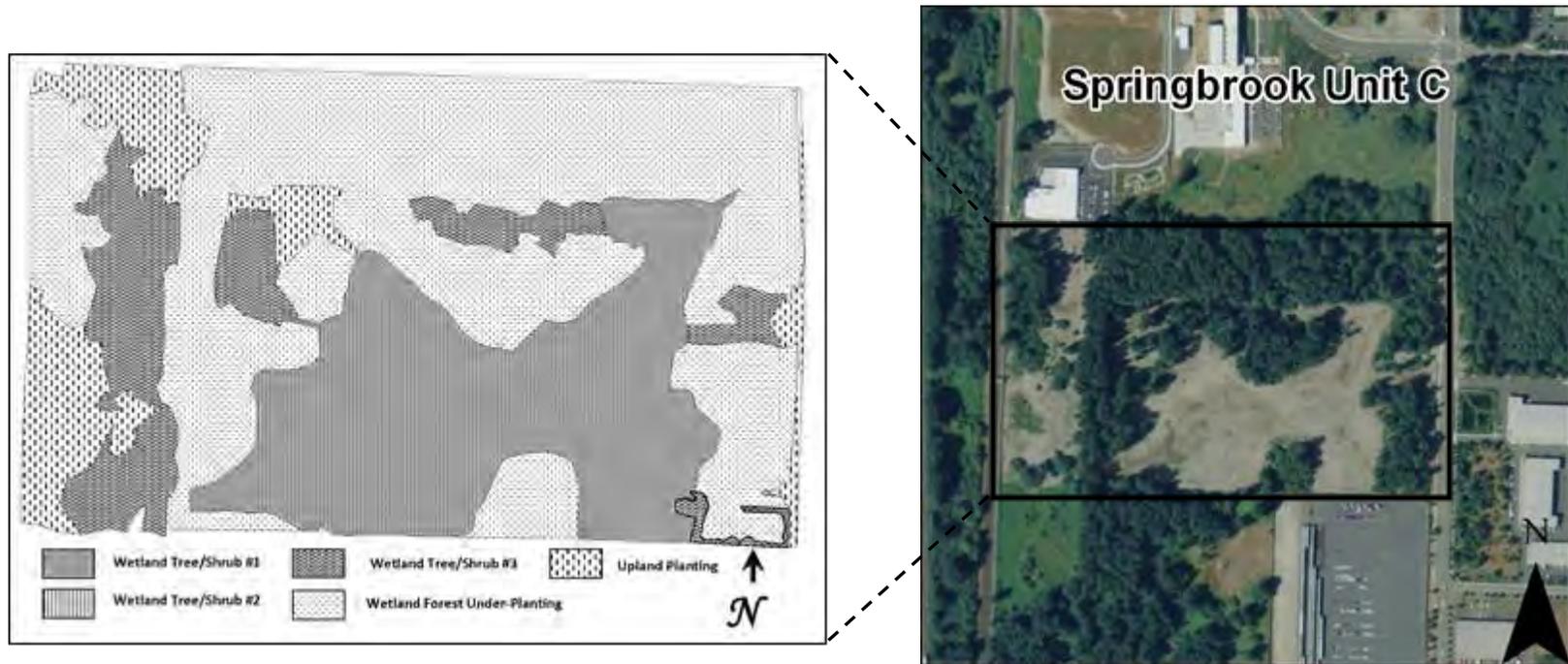


Figure 1 Site Sketch

The Springbrook Creek Wetland and Habitat Mitigation Bank is composed of five separate units, totaling 129.37 acres, which represents some of the last remaining large tracts of undeveloped land in the Green River Basin. All five units are located in the southwestern portion of the City of Renton, King County, Washington.

What are the performance standards for this site?

Year 5

Performance Standard C-2B

At least 9.27 acres of wetland will be present within the Wetland Re Establishment area in Unit C.

Performance Standard C-3C

The Forested Wetland Enhancement areas will contain at least 70 living native conifers per acre.

Performance Standard C-5A

Native woody vegetation within the Wetland Tree/Shrub planting areas will provide at least 50 percent aerial cover.

Performance Standard C-5B

At least three native woody species will provide at least 5% aerial cover each within the Wetland Tree/Shrub planting areas.

Performance Standard C-5C

Native woody vegetation within the Upland planting areas will provide at least 30 percent aerial cover.

Performance Standard C-5D

At least three native woody species will provide at least three percent aerial cover each within the Upland planting areas.

Performance Standard C-8

Himalayan blackberry will not cover more than 20 percent of the Forested Wetland Enhancement, Upland planting areas, and buffers at the site, and not more than 10 percent in the Wetland Re-Establishment Area. In Years 1 through 10, remove all Japanese knotweed, English ivy, and purple loosestrife identified within Unit C.

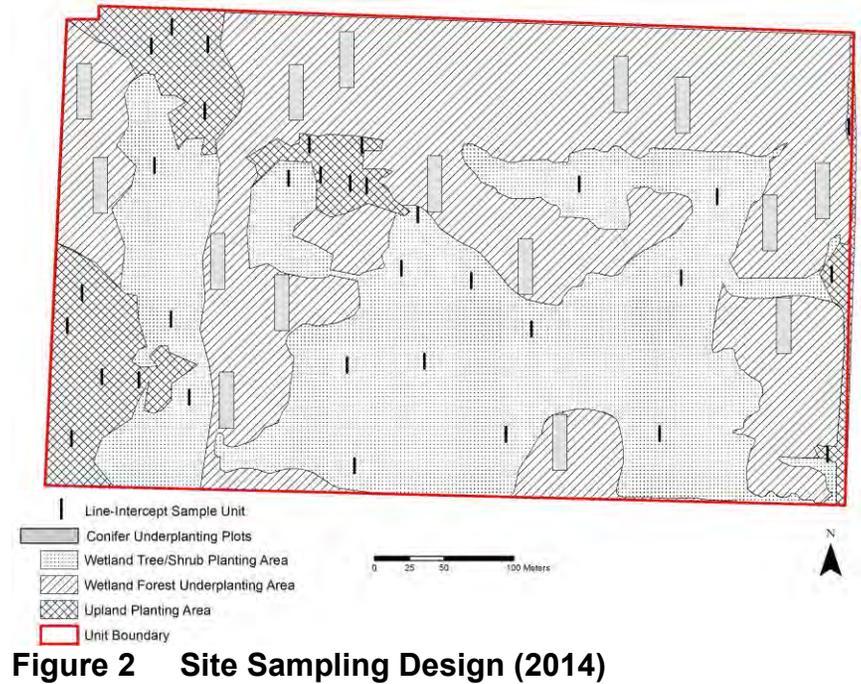
Appendix 1 shows the As Built (WSDOT 2010).

How were the performance standards evaluated?

To evaluate standards for vegetative cover in the wetland tree/shrub planting area (Performance Standard C-5A and B), sixteen 10-meter line intercept sample units were randomly positioned across the zone (Figure 2). To evaluate the standard for vegetative cover in the upland buffer (Performance Standard C-5C and D), 17, 10-meter line intercept sample units were randomly positioned throughout the upland planting area. To evaluate the standard for the density of underplanted conifers (Performance Standard C-3C), 14, 10 by 40-meter quadrats were randomly positioned throughout the wetland forest underplanting areas. The cover of Himalayan blackberry, Japanese knotweed, English ivy, and purple loosestrife were estimated qualitatively (Performance Standard C-8).

WSDOT staff performed a wetland delineation using methods described in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987), *the Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (Version 2.0) (USACE 2010) and a Global Positioning System (Trimble Mapping Grade) (Performance Standard C-2B).

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



How is the site developing?

Unit C continues to develop as intended. Woody plantings in the Wetland Tree/Shrub Planting Areas have reached an average height of three to four meters and are extremely dense throughout the entire planting area. Upland buffer planting areas also have high cover comprised of a diverse community of trees and shrubs. Under-planted conifers in the northwest corner of the site have experienced high mortality in lowest elevation areas due to prolonged inundation. This resulted in the mean density of conifer plantings across the wetland enhancement area to fall just short of the performance standard target. These areas since have been replanted with western red cedar. Invasive cover remains very low across the entire unit with relatively few patches of reed canarygrass and Himalayan blackberry present. The wetland delineation confirmed that adequate wetland area has been created in the wetland establishment area. Many passerine nests were observed during the wetland delineation (Photo 1).



Photo 1 Songbird nestlings in Tree/Shrub Planting Area (April 2014)

Results for Performance Standard C-2B

(At least 9.27 acres of wetland will be present within the Wetland Re-Establishment area in Unit C):

According to the results from the wetland delineation conducted on April 16 and 17, 2014 all 9.27 acres of the wetland re-establishment met wetland criteria (Photo 2). In addition, another 0.13 acres delineated, resulting in a wetland polygon that is 9.40 acres. See delineation report in Appendix 4.

Results for Performance Standard C-3C

(The Forested Wetland Enhancement areas will contain at least 70 living native conifers per acre):

The density of conifers across the entire forested wetland enhancement areas is 65 plants/acre ($CI_{80\%} = 45-86$) (Photo 3). This density estimate is likely below the performance standard target. Targeted replanting was performed in the areas where high mortality was observed.



Photo 2 Shallow inundation in wetland tree/shrub planting area (April 2014)



Photo 3 Underplanted conifer in enhanced wetland (November 2014)

Results for Performance Standard C5-A

(Native woody vegetation within the Wetland Tree/Shrub planting areas will provide at least 50% aerial cover):

The cover of native woody vegetation within the Wetland Tree/Shrub planting areas is 98% cover (CI_{80%} = 97-99). This cover estimate exceeds the performance standard target. Dominant species observed in this zone included black cottonwood (*Populus balsamifera*), willows (*Salix spp.*), and redosier dogwood (*Cornus alba*) (Photo 4).

Results for Performance Standard C5-B

(At least 3 native woody species will provide at least 5% aerial cover each within the Wetland Tree/Shrub planting areas):

A total of six woody species provide at least five percent relative cover. In addition to the three species listed above (C5-A), Oregon ash (*Fraxinus latifolia*), Pacific ninebark (*Physocarpus capitatus*), and Nootka rose (*Rosa nutkana*) also contribute at least five percent cover.

Results for Performance Standard C5-C

(Native woody vegetation within the Upland planting areas will provide at least 30% aerial cover):

The cover of native woody vegetation in the upland buffer planting areas is 92% cover (CI_{80%} = 88-96%). This cover value exceeds the performance standard target. Dominant species observed in this zone included black cottonwood, redosier dogwood, and snowberry (*Symphoricarpos albus*) (Photo 5).



Photo 4
Native wetland shrubs in Tree/Shrub Planting Area (July 2014)

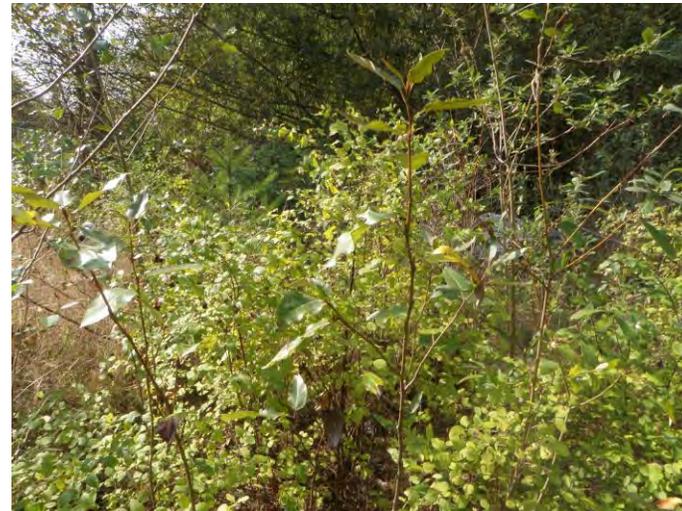


Photo 5
Native woody vegetation in Upland Buffer Planting Area (July 2014)

Results for Performance Standard C-5D

(At least 3 native woody species will provide at least 3% aerial cover each within the Upland planting areas)

A total of 11 native woody species provide at least three percent cover in the upland buffer planting areas. For a complete list of these species see Table 1 Appendix 3

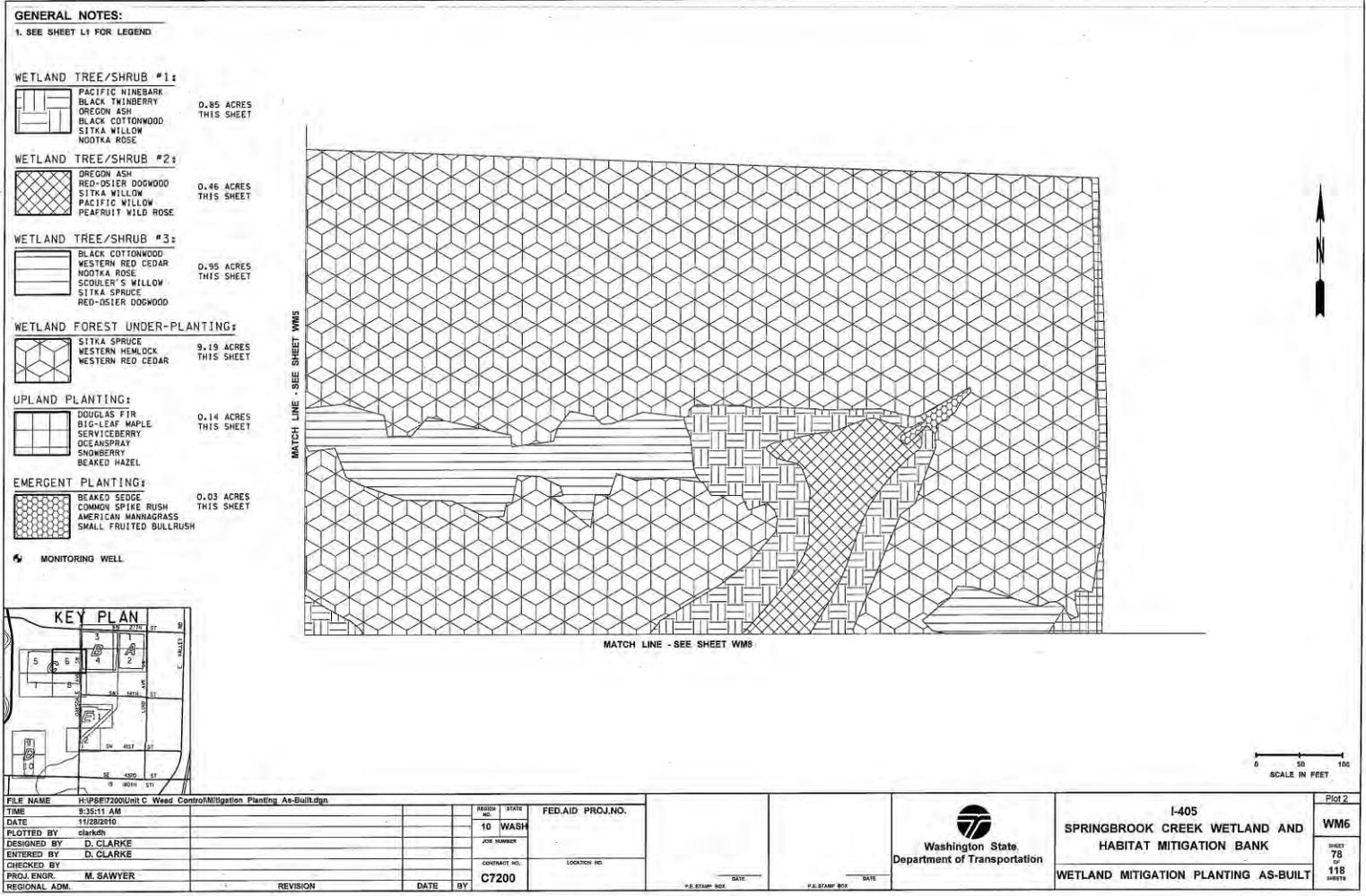
Results for Performance Standard C-8

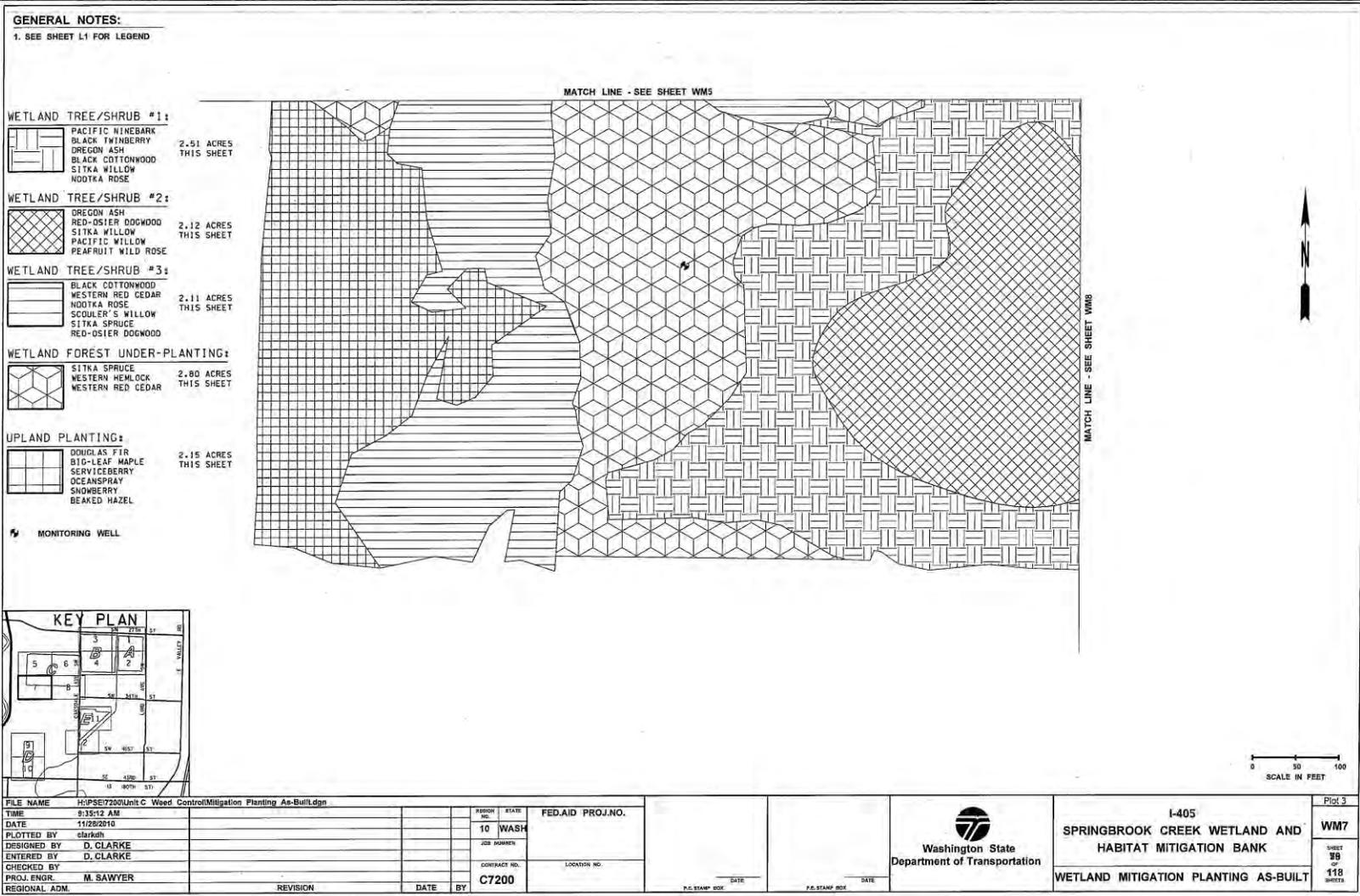
(Himalayan blackberry will not cover more than 20% of the Forested Wetland Enhancement, Upland planting areas, and buffers at the site, and not more than 10% in the Wetland Re-Establishment Area. In Years 1 through 10, remove all Japanese knotweed, English ivy, and purple loosestrife identified within Unit C):

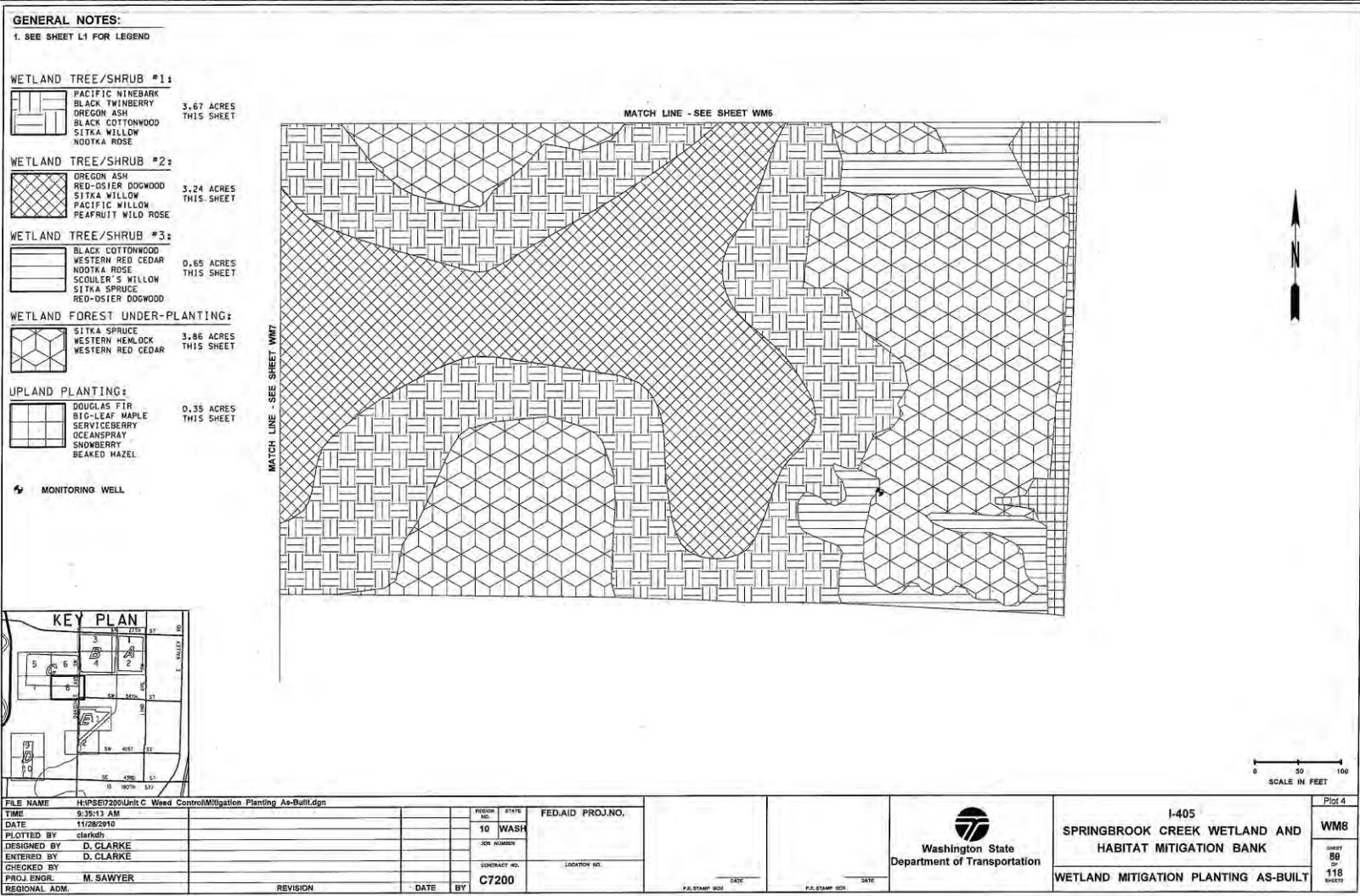
The cover of Himalayan blackberry across the entire unit is qualitatively estimated to be five percent. This species primarily occurred in the upland buffer and in the drier portions of the enhanced existing wetlands. No Japanese knotweed, English ivy, or purple loosestrife was observed within Unit C.

What is planned for this site?

Unit C will continue to receive on-going weed control on an as-needed basis. The forested enhancement area will be assessed for additional conifer planting. Additional details related to site management can be found in the Springbrook Creek Wetland and Habitat Mitigation Bank Status Report 2014.







FILE NAME	H:\P&E\7200\Units C Weed Control\Mitigation Planting As-Built.dgn	REGION NO.	10	STATE	WASH	FED.AID PROJ.NO.			I-405 SPRINGBROOK CREEK WETLAND AND HABITAT MITIGATION BANK	Plot 4
TIME	9:35:13 AM	JOB NUMBER	C7200	CONTRACT NO.		LOCATION NO.				WMS
DATE	11/28/2010	DESIGNED BY	D. CLARKE	CHECKED BY	M. SAWYER	REGIONAL ADM.				Sheet 88 of 118 sheets
PLOTTED BY	clarke	REVISION		DATE		BY				WETLAND MITIGATION PLANTING AS-BUILT

Appendix 2 – Photo Points

The photographs below were taken from permanent photo-points on July 31, 2014 and document current site development.



Photo Point 1a



Photo Point 1b



Photo Point 1c



Photo Point 1d



Photo Point 2a



Photo Point 2b



Photo Point 2c



Photo Point 3a



Photo Point 3b

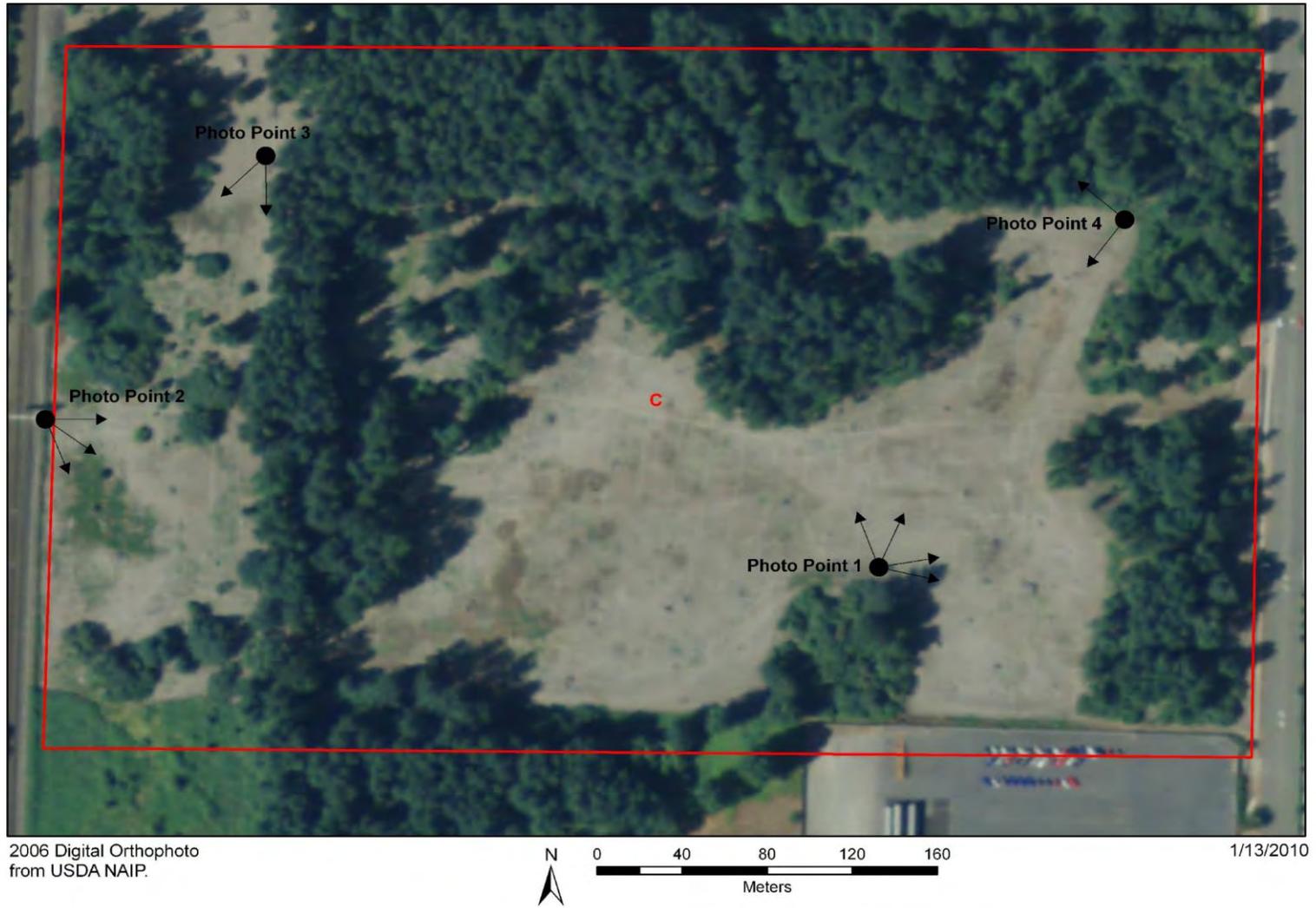


Photo Point 4a



Photo Point 4b

Photo Points - Springbrook Unit C



Appendix 3 – Data Tables

Table 1 Native Woody Species that provide at least 3 percent cover in the upland buffer

Species Name	Aerial Cover
black cottonwood (<i>Populus balsamifera</i>)	43%
willows (<i>Salix spp.</i>)	34%
redosier dogwood (<i>Cornus alba</i>)	23%
snowberry (<i>Symphoricarpos albus</i>)	20%
red alder (<i>Alnus rubra</i>)	8%
oceanspray (<i>Holodiscus discolor</i>)	5%
twinberry honeysuckle (<i>Lonicera involucrata</i>)	4%
Douglas-fir (<i>Pseudotsuga menziesii</i>)	4%
Nootka rose (<i>Rosa nutkana</i>)	4%
bigleaf maple (<i>Acer macrophyllum</i>)	4%
beaked hazelnut (<i>Corylus cornuta</i>)	3%

Appendix 4 – Wetland Delineation Report

WETLAND DELINEATION REPORT

Springbrook Creek Wetland and Habitat Mitigation Bank Site Unit C

USACE IP 200600100

King 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 Springbrook Creek Wetland and Habitat Mitigation Bank Unit C (Springbrook Bank Unit C). Field work was conducted by WSDOT wetland biologists Doug Littauer and Tom Mohagen, on April 16 and 17, 2014. The delineation identifies 9.40 acres of wetland within the wetland establishment areas of the Springbrook Bank Unit C.

General Information for Springbrook Bank Unit C		
Location:	S25, T23N, R4E. King County. (Vicinity map, Figure 1)	
	USACE IP Number	200600100
	Long./Lat. ID Number	1222330474518
	Land Resource Region (LRR)	A
	Major Land Resource Area (MLRA)	2
	Monitoring Period	2010 - 2019
	Year of Monitoring	5 of 10 (in 2014)
Area of Project Impact¹	provides advance mitigation for future projects	
Total Delineated Wetland Area	9.40 acres	

¹ Project permitted under USACE Individual Permit 200600100 (USACE 2006).

Location

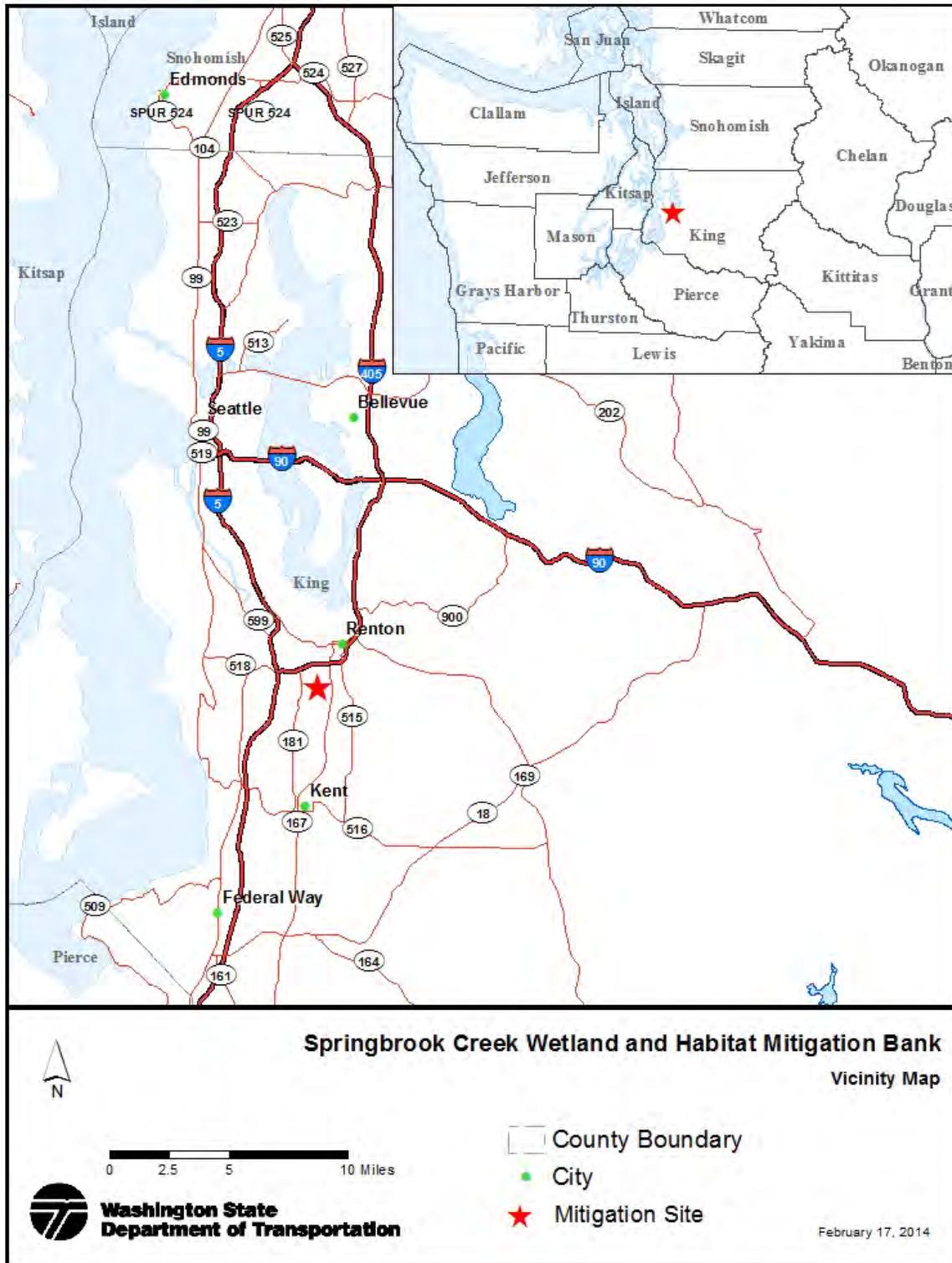


Figure 1. Vicinity Map

Methods

Wetland boundaries within Springbrook Bank Unit C were delineated using routine methods described in the:

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

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

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

Wetland Delineation and Study Area

Study Area

Wetlands described in this report were assessed only within the wetland establishment area of Springbrook Bank Unit C (Figure 2). Wetland preservation areas are present within Springbrook Bank Unit C, however they were not included in this delineation. The delineation (Figure 2) is a smaller subset of the entire Springbrook Bank Unit C site. The wetland establishment area was determined by georeferencing plan sheets in ArcGIS. The delineation boundary and study area are the same for this delineation.

Wetlands

Springbrook Bank Unit C wetland establishment area has depressional wetland areas with a palustrine scrub-shrub (PSS) vegetation community. The PSS community has developed a canopy structure with two distinct strata including a dense canopy of taller shrubs with scattered shorter shrubs in the understory. Shallow inundation and soil saturation is present throughout much of the wetland during the early to mid growing season.

The delineation determined 9.40 acres of wetland were present within Springbrook Bank Unit C wetland establishment area. Delineation data were collected at ten sampling points and recorded on wetland determination data forms (Appendix A). Paired wetland and upland sample points were used to define the wetland edge. Upland data points occur on a relatively narrow excavated slope. Above the slope lies a preexisting wetland area not addressed in this report. 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. The two months prior to field work were wetter than normal, with the third prior month drier than normal (Appendix B-1).

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

Growing Season

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

- New vegetative growth was present on some herbaceous plants.
- Leaves on most woody species were partially or fully emerged.



Figure 2. Wetland boundary/study area in red, sampling point locations in black.

Springbrook Bank Unit C – Wetland Delineation Summary		
Total Delineated Wetland Area	9.40 acres	
	Wetland Determination Data Form(s)	Appendix A; Sampling Point W1-SP1, W1-SP3, W1-SP5, W1-SP7, W1-SP9
	Upland Determination Data Form(s)	Appendix A; Sampling Point W1-SP2, W1-SP4, W1-SP6, W1-SP8, W1-SP10
	Delineator(s)	Doug Littauer Tom Mohagen
	Delineation Date	April 16 and 17, 2014
Vegetation	Trees – none Shrubs – Sitka willow (<i>Salix sitchensis</i>), Pacific willow (<i>Salix lasiandra</i>), black cottonwood (<i>Populus balsamifera</i>), redosier dogwood (<i>Cornus alba</i>), Nootka rose (<i>Rosa nutkana</i>), Oregon ash (<i>Fraxinus latifolia</i>) Herbs – creeping buttercup (<i>Ranunculus repens</i>),	
Soils	Soils examined to a depth of 20 inches exhibited hydric characteristics. Matrix colors of 2.5Y 4/1 and 2.5Y 5/2 were observed. Redoximorphic concentrations were observed in some layers. Indicator Depleted Matrix (F3) met.	
Hydrology	A high groundwater table associated with the Green River is the predominant source of hydrology. Surface water also contributes hydrology, flowing through an inlet and outlet, both with water control structures. Precipitation also provides hydrologic inputs. Inundation was present to 5 inches in some areas of the wetland. Other areas had water in observation pits at the soil surface. Water marks and water-stained leaves were also observed in some areas.	
Rationale for Delineation	Positive indicators of all three wetland criteria are present. Placement of boundary determined by presence/absence of wetland hydrology indicators. In many locations near the upland/wetland boundary both hydric soils and hydrophytic vegetation were present. Because the delineation occurred at an ideal time to observe primary hydrology indicators, presence/absence of hydrology indicators was a primary factor in determining placement of the wetland boundary. Soils in part of the study area are mapped hydric soils and hydric soils were observed in upland areas adjacent to the wetland boundary.	

Limitations

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

References

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.ercd.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 17]. 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 King County, Station Kent, Washington 454169. [cited 2014 Nov 17]. Available at: http://efotg.sc.egov.usda.gov/efotg_locator.aspx
5. [NRCS] Natural Resource Conservation Service [Internet]. 2014. Web Soil Survey for King County, Washington. US Department of Agriculture. [cited 2014 Nov 17]. Available at: <http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>
6. [USACE] US Army Corps of Engineers. 2006. Department of the Army Individual Permit Number 200600100.
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. Springbrook Creek Wetland and Habitat Mitigation Bank Mitigation Bank Instrument. Washington State Department of Transportation, I-405 Corridor Program.
9. [WSDOT] Washington State Department of Transportation. 2014. Wetland Delineation and Assessment [Internet]. Olympia (WA): Environmental Services Office. [cited 2014 Nov 17]. 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-SP5

W1-SP6

W1-SP7

W1-SP8

W1-SP9

W1-SP10

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

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

Project/Site: Springbrook Creek Unit C City/County: Renton/King Sampling Date: 17-Apr-14
 Applicant/Owner: WSDOT State: WA Sampling Point: w1-sp1
 Investigator(s): Doug Littauer, Tom Mohagen Section, Township, Range: S 25 T 23N R 4E
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): flat Slope: 5.0 % / 2.9 °
 Subregion (LRR): LRR A Lat.: 47.452 Long.: -122.234 Datum: NAD83HARN
 Soil Map Unit Name: Puyallup fine sandy loam NWI classification: PSS

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

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

Remarks:
 Wetter than normal conditions characterize the 3 month period prior to field work (Appendix B-1).

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status	
Tree Stratum (Plot size: <u>20 by 10 feet</u>)				Dominance Test worksheet: Number of Dominant Species That are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)
1. _____	_____	<input type="checkbox"/> 0.0%	_____	
2. _____	_____	<input type="checkbox"/> 0.0%	_____	
3. _____	_____	<input type="checkbox"/> 0.0%	_____	
4. _____	_____	<input type="checkbox"/> 0.0%	_____	
0 = Total Cover				
Sapling/Shrub Stratum (Plot size: <u>10 ft dia</u>)				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>47</u> x 2 = <u>94</u> FAC species <u>52</u> x 3 = <u>156</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>99</u> (A) <u>250</u> (B) Prevalence Index = B/A = <u>2.525</u>
1. <u>Salix sitchensis</u>	<u>40</u>	<input checked="" type="checkbox"/> 42.6%	<u>FACW</u>	
2. <u>Populus balsamifera</u>	<u>40</u>	<input checked="" type="checkbox"/> 42.6%	<u>FAC</u>	
3. <u>Cornus alba</u>	<u>7</u>	<input type="checkbox"/> 7.4%	<u>FACW</u>	
4. <u>Rosa nutkana</u>	<u>7</u>	<input type="checkbox"/> 7.4%	<u>FAC</u>	
5. _____	<u>0</u>	<input type="checkbox"/> 0.0%	_____	
94 = Total Cover				
Herb Stratum (Plot size: <u>5 ft dia</u>)				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.
1. <u>Ranunculus repens</u>	<u>5</u>	<input checked="" type="checkbox"/> 100.0%	<u>FAC</u>	
2. _____	<u>0</u>	<input type="checkbox"/> 0.0%	_____	
3. _____	<u>0</u>	<input type="checkbox"/> 0.0%	_____	
4. _____	<u>0</u>	<input type="checkbox"/> 0.0%	_____	
5. _____	<u>0</u>	<input type="checkbox"/> 0.0%	_____	
6. _____	<u>0</u>	<input type="checkbox"/> 0.0%	_____	
7. _____	<u>0</u>	<input type="checkbox"/> 0.0%	_____	
8. _____	<u>0</u>	<input type="checkbox"/> 0.0%	_____	
9. _____	<u>0</u>	<input type="checkbox"/> 0.0%	_____	
10. _____	<u>0</u>	<input type="checkbox"/> 0.0%	_____	
11. _____	<u>0</u>	<input type="checkbox"/> 0.0%	_____	
5 = Total Cover				
Woody Vine Stratum (Plot size: <u>5 ft dia</u>)				
1. _____	_____	<input type="checkbox"/> 0.0%	_____	
2. _____	_____	<input type="checkbox"/> 0.0%	_____	
0 = Total Cover				
% Bare Ground in Herb Stratum: <u>95</u>				

Remarks:

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

Soil

Sampling Point: W1-sp1

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks		
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²				
0-18	2.5Y	4/1	70	10YR	4/6	30	C	M	Silt Loam	concentration 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 checked="" 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 checked="" 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 checked="" type="radio"/> No <input type="radio"/>	Depth (inches): <input type="text" value="0"/>	
Saturation Present? (includes capillary fringe)	Yes <input checked="" type="radio"/> No <input type="radio"/>	Depth (inches): <input type="text" value="0"/>	

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

Remarks:
saturated to surface

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

Project/Site: Springbrook Creek Unit C City/County: Renton/King Sampling Date: 17-Apr-14
 Applicant/Owner: WSDOT State: WA Sampling Point: w1-sp2
 Investigator(s): Doug Littauer, Tom Mohagen Section, Township, Range: S 24 T 23N R 4E
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): flat Slope: 5.0 % / 2.9 °
 Subregion (LRR): LRR A Lat.: 47.452 Long.: -122.234 Datum: NAD83HARN
 Soil Map Unit Name: Puyallup fine sandy loam NWI classification: Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <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 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 characterize the 3 month period prior to field work (Appendix B-1). Placement of boundary determined by presence/absence of wetland hydrology indicators. Soils and vegetation are present in this location but hydrology indicators are lacking even during a

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status	
Tree Stratum (Plot size: <u>20 by 10 feet</u>)				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)
1. _____	_____	<input type="checkbox"/> 0.0%	_____	
2. _____	_____	<input type="checkbox"/> 0.0%	_____	
3. _____	_____	<input type="checkbox"/> 0.0%	_____	
4. _____	_____	<input type="checkbox"/> 0.0%	_____	
0 = Total Cover				
Sapling/Shrub Stratum (Plot size: <u>15 by 10 feet</u>)				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>13</u> x 2 = <u>26</u> FAC species <u>145</u> x 3 = <u>435</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>158</u> (A) <u>461</u> (B) Prevalence Index = B/A = <u>2.918</u>
1. <u>Populus balsamifera</u>	60	<input checked="" type="checkbox"/> 72.3%	FAC	
2. <u>Fraxinus latifolia</u>	3	<input type="checkbox"/> 3.6%	FACW	
3. <u>Lonicera involucrata</u>	5	<input type="checkbox"/> 6.0%	FAC	
4. <u>Physocarpus capitatus</u>	10	<input type="checkbox"/> 12.0%	FACW	
5. <u>Rosa nutkana</u>	5	<input type="checkbox"/> 6.0%	FAC	
83 = Total Cover				
Herb Stratum (Plot size: <u>5 ft dia</u>)				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.
1. <u>Ranunculus repens</u>	75	<input checked="" type="checkbox"/> 100.0%	FAC	
2. _____	0	<input type="checkbox"/> 0.0%	_____	
3. _____	0	<input type="checkbox"/> 0.0%	_____	
4. _____	0	<input type="checkbox"/> 0.0%	_____	
5. _____	0	<input type="checkbox"/> 0.0%	_____	
6. _____	0	<input type="checkbox"/> 0.0%	_____	
7. _____	0	<input type="checkbox"/> 0.0%	_____	
8. _____	0	<input type="checkbox"/> 0.0%	_____	
9. _____	0	<input type="checkbox"/> 0.0%	_____	
10. _____	0	<input type="checkbox"/> 0.0%	_____	
11. _____	0	<input type="checkbox"/> 0.0%	_____	
75 = Total Cover				
Woody Vine Stratum (Plot size: <u>5 ft dia</u>)				
1. _____	_____	<input type="checkbox"/> 0.0%	_____	
2. _____	_____	<input type="checkbox"/> 0.0%	_____	
0 = Total Cover				
% Bare Ground in Herb Stratum: <u>25</u>				

Remarks:

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

Soil

Sampling Point: W1-sp2

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

Depth (inches)	Matrix			Redox Features				Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹	Loc ²		
0-5	10YR	2/1	100					Silt Loam	
5-18	2.5Y	3/2	60	10YR	3/6	15	C	M	concentration is prominent
				7.5YR	4/1	25	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 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) (MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Dry Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Drift deposits (B3)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> FAC-neutral Test (D5)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Frost Heave Hummocks (D7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	
<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	
<input type="checkbox"/> Salt Crust (B11)	
<input type="checkbox"/> Aquatic Invertebrates (B13)	
<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	
<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	
<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	
<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	
<input type="checkbox"/> Other (Explain in Remarks)	

Field Observations:

Surface Water Present? Yes No Depth (inches):

Water Table Present? Yes No Depth (inches):

Saturation Present? (includes capillary fringe) Yes No Depth (inches): **Wetland Hydrology Present?** Yes No

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

Remarks:
 No hydrology present to 18 inches. Does not meet a hydrology indicator.

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

Project/Site: Springbrook Creek Unit C City/County: Renton/King Sampling Date: 17-Apr-14
 Applicant/Owner: WSDOT State: WA Sampling Point: w1-sp3
 Investigator(s): Doug Littauer, Tom Mohagen Section, Township, Range: S 25 T 23N R 4E
 Landform (hillslope, terrace, etc.): Toeslope Local relief (concave, convex, none): flat Slope: 2.0 % / 1.1 °
 Subregion (LRR): LRR A Lat.: 47.452 Long.: -122.236 Datum: NAD83HARN
 Soil Map Unit Name: Puyallup fine sandy loam NWI classification: PSS

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

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

Remarks:
 Wetter than normal conditions characterize the 3 month period prior to field work (Appendix B-1).

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status	
Tree Stratum (Plot size: <u>20 by 10 feet</u>)				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>1</u> (B) Percent of dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)
1. _____	_____	<input type="checkbox"/> 0.0%	_____	
2. _____	_____	<input type="checkbox"/> 0.0%	_____	
3. _____	_____	<input type="checkbox"/> 0.0%	_____	
4. _____	_____	<input type="checkbox"/> 0.0%	_____	
0 = Total Cover				
Sapling/Shrub Stratum (Plot size: <u>15 by 10 feet</u>)				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>80</u> x 2 = <u>160</u> FAC species <u>15</u> x 3 = <u>45</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>95</u> (A) <u>205</u> (B) Prevalence Index = B/A = <u>2.158</u>
1. <u>Populus balsamifera</u>	10	<input type="checkbox"/> 10.5% FAC	_____	
2. <u>Salix sitchensis</u>	80	<input checked="" type="checkbox"/> 84.2% FACW	_____	
3. <u>Rosa nutkana</u>	5	<input type="checkbox"/> 5.3% FAC	_____	
4. _____	0	<input type="checkbox"/> 0.0%	_____	
5. _____	0	<input type="checkbox"/> 0.0%	_____	
95 = Total Cover				
Herb Stratum (Plot size: <u>5 ft dia</u>)				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.
1. _____	0	<input type="checkbox"/> 0.0%	_____	
2. _____	0	<input type="checkbox"/> 0.0%	_____	
3. _____	0	<input type="checkbox"/> 0.0%	_____	
4. _____	0	<input type="checkbox"/> 0.0%	_____	
5. _____	0	<input type="checkbox"/> 0.0%	_____	
6. _____	0	<input type="checkbox"/> 0.0%	_____	
7. _____	0	<input type="checkbox"/> 0.0%	_____	
8. _____	0	<input type="checkbox"/> 0.0%	_____	
9. _____	0	<input type="checkbox"/> 0.0%	_____	
10. _____	0	<input type="checkbox"/> 0.0%	_____	
11. _____	0	<input type="checkbox"/> 0.0%	_____	
0 = Total Cover				
Woody Vine Stratum (Plot size: <u>5 ft dia</u>)				
1. _____	_____	<input type="checkbox"/> 0.0%	_____	
2. _____	_____	<input type="checkbox"/> 0.0%	_____	
0 = Total Cover				
% Bare Ground in Herb Stratum: <u>100</u>				

Remarks:

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

Soil

Sampling Point: W1-sp3

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

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

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 meet hydric soil criteria due to prolonged inundation 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 checked="" 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 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 checked="" 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 checked="" type="radio"/> No <input type="radio"/>	Depth (inches): <input type="text" value="3"/>	Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>
Water Table Present?	Yes <input checked="" type="radio"/> No <input type="radio"/>	Depth (inches): <input type="text" value="0"/>	
Saturation Present? (includes capillary fringe)	Yes <input checked="" type="radio"/> No <input type="radio"/>	Depth (inches): <input type="text" value="0"/>	

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

Remarks:

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

Project/Site: Springbrook Creek Unit C City/County: Renton/King Sampling Date: 17-Apr-14
 Applicant/Owner: WSDOT State: WA Sampling Point: w1-sp4
 Investigator(s): Doug Littauer, Tom Mohagen Section, Township, Range: S 25 T 23N R 4E
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): convex Slope: 15.0 % / 8.5 °
 Subregion (LRR): LRR A Lat.: 47.452 Long.: -122.236 Datum: NAD83HARN
 Soil Map Unit Name: Puyallup fine sandy loam NWI classification: Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <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 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 characterize the 3 month period prior to field work (Appendix B-1). Placement of boundary determined by presence/absence of wetland hydrology indicators. Soils and vegetation are present in this location but hydrology indicators are lacking even during a

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Rel.Strat. Cover	Indicator Status	
Tree Stratum (Plot size: <u>20 by 10 feet</u>)				
1. <u>Populus balsamifera</u>	60	<input checked="" type="checkbox"/> 100.0%	FAC	Dominance Test worksheet: Number of Dominant Species That are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)
2. _____	0	<input type="checkbox"/> 0.0%		
3. _____	0	<input type="checkbox"/> 0.0%		
4. _____	0	<input type="checkbox"/> 0.0%		
	60	= Total Cover		
Sapling/Shrub Stratum (Plot size: <u>15 by 10 feet</u>)				
1. <u>Rosa nutkana</u>	40	<input checked="" type="checkbox"/> 44.4%	FAC	Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>40</u> x 2 = <u>80</u> FAC species <u>110</u> x 3 = <u>330</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>150</u> (A) <u>410</u> (B) Prevalence Index = B/A = <u>2.733</u>
2. <u>Physocarpus capitatus</u>	30	<input checked="" type="checkbox"/> 33.3%	FACW	
3. <u>Fraxinus latifolia</u>	10	<input type="checkbox"/> 11.1%	FACW	
4. <u>Lonicera involucrata</u>	10	<input type="checkbox"/> 11.1%	FAC	
5. _____	0	<input type="checkbox"/> 0.0%		
	90	= Total Cover		
Herb Stratum (Plot size: <u>5 ft dia</u>)				
1. _____	0	<input type="checkbox"/> 0.0%		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. _____	0	<input type="checkbox"/> 0.0%		
3. _____	0	<input type="checkbox"/> 0.0%		
4. _____	0	<input type="checkbox"/> 0.0%		
5. _____	0	<input type="checkbox"/> 0.0%		
6. _____	0	<input type="checkbox"/> 0.0%		
7. _____	0	<input type="checkbox"/> 0.0%		
8. _____	0	<input type="checkbox"/> 0.0%		
9. _____	0	<input type="checkbox"/> 0.0%		
10. _____	0	<input type="checkbox"/> 0.0%		
11. _____	0	<input type="checkbox"/> 0.0%		
	0	= Total Cover		
Woody Vine Stratum (Plot size: <u>5 ft dia</u>)				
1. _____		<input type="checkbox"/> 0.0%		Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/>
2. _____		<input type="checkbox"/> 0.0%		
	0	= Total Cover		
% Bare Ground in Herb Stratum: <u>100</u>				

Remarks:

*Indicator 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			
0-3	10YR	3/1	100						Silt Loam	
3-20	2.5Y	4/1	70	7.5YR	4/6	30	C	M		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 checked="" type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Sandy Muck Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox depressions (F8)	

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

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

Hydric Soil Present? Yes No

Remarks:

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Sediment Deposits (B2)	<input 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 to 20 inches. Does not meet a hydrology indicator.

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

Project/Site: Springbrook Creek Unit C City/County: Renton/King Sampling Date: 17-Apr-14
 Applicant/Owner: WSDOT State: WA Sampling Point: w1-sp5
 Investigator(s): Doug Littauer, Tom Mohagen Section, Township, Range: S 25 T 23N R 4E
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): convex Slope: 15.0 % / 8.5 °
 Subregion (LRR): LRR A Lat.: 47.452 Long.: -122.237 Datum: NAD83HARN
 Soil Map Unit Name: Woodinville silt loam NWI classification: PSS

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

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

Remarks:
 Wetter than normal conditions characterize the 3 month period prior to field work (Appendix B-1).

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status	Dominance Test worksheet:
Tree Stratum (Plot size: <u>20 by 10 feet</u>)				Number of Dominant Species That are OBL, FACW, or FAC: <u>2</u> (A)
1. _____	_____	<input type="checkbox"/> 0.0%	_____	Total Number of Dominant Species Across All Strata: <u>2</u> (B)
2. _____	_____	<input type="checkbox"/> 0.0%	_____	Percent of dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)
3. _____	_____	<input type="checkbox"/> 0.0%	_____	
4. _____	_____	<input type="checkbox"/> 0.0%	_____	
	0 = Total Cover			
Sapling/Shrub Stratum (Plot size: <u>10 ft dia</u>)				Prevalence Index worksheet:
1. <u>Salix lasiandra</u>	70	<input checked="" type="checkbox"/> 61.9%	FACW	Total % Cover of: _____ Multiply by: _____
2. <u>Salix sitchensis</u>	10	<input type="checkbox"/> 8.8%	FACW	OBL species <u>0</u> x 1 = <u>0</u>
3. <u>Rosa nutkana</u>	3	<input type="checkbox"/> 2.7%	FAC	FACW species <u>80</u> x 2 = <u>160</u>
4. <u>Populus balsamifera</u>	30	<input checked="" type="checkbox"/> 26.5%	FAC	FAC species <u>33</u> x 3 = <u>99</u>
5. _____	0	<input type="checkbox"/> 0.0%	_____	FACU species <u>0</u> x 4 = <u>0</u>
	113 = Total Cover			UPL species <u>0</u> x 5 = <u>0</u>
Herb Stratum (Plot size: <u>5 ft dia</u>)				Column Totals: <u>113</u> (A) <u>259</u> (B)
1. _____	0	<input type="checkbox"/> 0.0%	_____	Prevalence Index = B/A = <u>2.292</u>
2. _____	0	<input type="checkbox"/> 0.0%	_____	
3. _____	0	<input type="checkbox"/> 0.0%	_____	
4. _____	0	<input type="checkbox"/> 0.0%	_____	
5. _____	0	<input type="checkbox"/> 0.0%	_____	
6. _____	0	<input type="checkbox"/> 0.0%	_____	
7. _____	0	<input type="checkbox"/> 0.0%	_____	
8. _____	0	<input type="checkbox"/> 0.0%	_____	
9. _____	0	<input type="checkbox"/> 0.0%	_____	
10. _____	0	<input type="checkbox"/> 0.0%	_____	
11. _____	0	<input type="checkbox"/> 0.0%	_____	
	0 = Total Cover			
Woody Vine Stratum (Plot size: <u>5 ft dia</u>)				Hydrophytic Vegetation Indicators:
1. _____	_____	<input type="checkbox"/> 0.0%	_____	<input type="checkbox"/> 1 - Rapid Test for Hydrologic Vegetation
2. _____	_____	<input type="checkbox"/> 0.0%	_____	<input checked="" type="checkbox"/> 2 - Dominance Test is > 50%
	0 = Total Cover			<input checked="" type="checkbox"/> 3 - Prevalence Index is ≤ 3.0 ¹
% Bare Ground in Herb Stratum: <u>100</u>				<input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
				<input type="checkbox"/> 5 - Wetland Non-Vascular Plants ¹
				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
				Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/>

Remarks:

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

Soil

Sampling Point: w1-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		

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

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

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

Hydric Soil Present? Yes No

Remarks:
 Soils meet hydric soil criteria due to prolonged inundation during the growing season.

Hydrology

Wetland Hydrology Indicators:

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

Field Observations:

Surface Water Present?	Yes <input checked="" type="radio"/> No <input type="radio"/>	Depth (inches):	<input type="text" value="5"/>	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" value="0"/>	
Saturation Present? (includes capillary fringe)	Yes <input type="radio"/> No <input checked="" 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: Springbrook Creek Unit C City/County: Renton/King Sampling Date: 17-Apr-14
 Applicant/Owner: WSDOT State: WA Sampling Point: w1-sp6
 Investigator(s): Doug Littauer, Tom Mohagen Section, Township, Range: S 24 T 23N R 4E
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): convex Slope: 15.0 % / 8.5 °
 Subregion (LRR): LRR A Lat.: 47.452 Long.: -122.237 Datum: NAD83HARN
 Soil Map Unit Name: Woodinville silt loam NWI classification: Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <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 characterize the 3 month period prior to field work (Appendix B-1). Placement of boundary determined by presence/absence of wetland hydrology and hydric soils indicators. Wetland vegetation is present in this location but hydrology and soils indicators are

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status		
Tree Stratum (Plot size: <u>20 by 10 feet</u>)					
1. _____	_____	<input type="checkbox"/> 0.0%	_____	Dominance Test worksheet: Number of Dominant Species That are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)	
2. _____	_____	<input type="checkbox"/> 0.0%	_____		
3. _____	_____	<input type="checkbox"/> 0.0%	_____		
4. _____	_____	<input type="checkbox"/> 0.0%	_____		
	0	= Total Cover			
Sapling/Shrub Stratum (Plot size: <u>15 by 10 feet</u>)					
1. <u>Salix sitchensis</u>	60	<input checked="" type="checkbox"/> 38.7%	FACW	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>85</u> x 2 = <u>170</u> FAC species <u>73</u> x 3 = <u>219</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>158</u> (A) <u>389</u> (B) Prevalence Index = B/A = <u>2.462</u>	
2. <u>Populus balsamifera</u>	30	<input type="checkbox"/> 19.4%	FAC		
3. <u>Salix lasiandra</u>	5	<input type="checkbox"/> 3.2%	FACW		
4. <u>Physocarpus capitatus</u>	20	<input type="checkbox"/> 12.9%	FACW		
5. <u>Rosa nutkana</u>	40	<input checked="" type="checkbox"/> 25.8%	FAC		
	155	= Total Cover			
Herb Stratum (Plot size: <u>5 ft dia</u>)					
1. <u>Equisetum arvense</u>	3	<input checked="" type="checkbox"/> 100.0%	FAC		
2. _____	0	<input type="checkbox"/> 0.0%	_____		
3. _____	0	<input type="checkbox"/> 0.0%	_____		
4. _____	0	<input type="checkbox"/> 0.0%	_____		
5. _____	0	<input type="checkbox"/> 0.0%	_____		
6. _____	0	<input type="checkbox"/> 0.0%	_____		
7. _____	0	<input type="checkbox"/> 0.0%	_____		
8. _____	0	<input type="checkbox"/> 0.0%	_____		
9. _____	0	<input type="checkbox"/> 0.0%	_____		
10. _____	0	<input type="checkbox"/> 0.0%	_____		
11. _____	0	<input type="checkbox"/> 0.0%	_____		
	3	= Total Cover			
Woody Vine Stratum (Plot size: <u>5 ft dia</u>)					
1. _____	_____	<input type="checkbox"/> 0.0%	_____		
2. _____	_____	<input type="checkbox"/> 0.0%	_____		
	0	= Total Cover			
% Bare Ground in Herb Stratum: <u>97</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-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	75	7.5YR	4/6	25	C	M	Silt Loam	concentrations prominent
3-18	2.5Y	4/1		2.5Y	5/2		C	M/PL	Silt Loam	concentration is faint

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:
 Top layer is 1 inch too thin to meet F6. Second layer would need distinct or prominent concentrations to meet F3. Mapped soils are hydric.

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 to 18 inches

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

Project/Site: Springbrook Creek Unit C City/County: Renton/King Sampling Date: 17-Apr-14
 Applicant/Owner: WSDOT State: WA Sampling Point: w1-sp7
 Investigator(s): Doug Littauer, Tom Mohagen Section, Township, Range: S 25 T 23N R 4E
 Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): concave Slope: 15.0 % / 8.5 °
 Subregion (LRR): LRR A Lat.: 47.451 Long.: -122.237 Datum: NAD83HARN
 Soil Map Unit Name: Woodinville silt loam NWI classification: PSS

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="radio"/> No <input type="radio"/>
Remarks: Wetter than normal conditions characterize the 3 month period prior to field work (Appendix B-1).	

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Rel.Strat. Cover	Indicator Status	
Tree Stratum (Plot size: <u>20 by 10 feet</u>)				
1. _____	_____	<input type="checkbox"/> 0.0%	_____	Dominance Test worksheet: Number of Dominant Species That are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)
2. _____	_____	<input type="checkbox"/> 0.0%	_____	
3. _____	_____	<input type="checkbox"/> 0.0%	_____	
4. _____	_____	<input type="checkbox"/> 0.0%	_____	
0 = Total Cover				
Sapling/Shrub Stratum (Plot size: <u>20 ft dia</u>)				
1. <u>Salix lasiandra</u>	30	<input checked="" type="checkbox"/> 26.8%	FACW	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>72</u> x 2 = <u>144</u> FAC species <u>40</u> x 3 = <u>120</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>112</u> (A) <u>264</u> (B) Prevalence Index = B/A = <u>2.357</u>
2. <u>Salix sitchensis</u>	30	<input checked="" type="checkbox"/> 26.8%	FACW	
3. <u>Cornus alba</u>	10	<input type="checkbox"/> 8.9%	FACW	
4. <u>Populus balsamifera</u>	40	<input checked="" type="checkbox"/> 35.7%	FAC	
5. <u>Fraxinus latifolia</u>	2	<input type="checkbox"/> 1.8%	FACW	
112 = Total Cover				
Herb Stratum (Plot size: <u>5 ft dia</u>)				
1. _____	_____	<input type="checkbox"/> 0.0%	_____	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. _____	_____	<input type="checkbox"/> 0.0%	_____	
3. _____	_____	<input type="checkbox"/> 0.0%	_____	
4. _____	_____	<input type="checkbox"/> 0.0%	_____	
5. _____	_____	<input type="checkbox"/> 0.0%	_____	
6. _____	_____	<input type="checkbox"/> 0.0%	_____	
7. _____	_____	<input type="checkbox"/> 0.0%	_____	
8. _____	_____	<input type="checkbox"/> 0.0%	_____	
9. _____	_____	<input type="checkbox"/> 0.0%	_____	
10. _____	_____	<input type="checkbox"/> 0.0%	_____	
11. _____	_____	<input type="checkbox"/> 0.0%	_____	
0 = Total Cover				
Woody Vine Stratum (Plot size: <u>5 ft dia</u>)				
1. _____	_____	<input type="checkbox"/> 0.0%	_____	Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/>
2. _____	_____	<input type="checkbox"/> 0.0%	_____	
0 = Total Cover				
% Bare Ground in Herb Stratum: <u>100</u>				
Remarks:				

¹Indicator 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: Springbrook Creek Unit C City/County: Renton/King Sampling Date: 17-Apr-14
 Applicant/Owner: WSDOT State: WA Sampling Point: w1-sp8
 Investigator(s): Doug Littauer, Tom Mohagen Section, Township, Range: S 25 T 23N R 4E
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): convex Slope: 15.0 % / 8.5 °
 Subregion (LRR): LRR A Lat.: 47.451 Long.: -122.237 Datum: NAD83HARN
 Soil Map Unit Name: Woodinville silt loam NWI classification: Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <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 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 characterize the 3 month period prior to field work (Appendix B-1). Placement of boundary determined by presence/absence of wetland hydrology indicators. Soils and vegetation are present in this location but hydrology indicators are lacking even during a

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status	Dominance Test worksheet:
Tree Stratum (Plot size: <u>20 by 10 feet</u>)				Number of Dominant Species That are OBL, FACW, or FAC: <u>1</u> (A)
1. _____	_____	<input type="checkbox"/> 0.0%	_____	Total Number of Dominant Species Across All Strata: <u>1</u> (B)
2. _____	_____	<input type="checkbox"/> 0.0%	_____	Percent of dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)
3. _____	_____	<input type="checkbox"/> 0.0%	_____	
4. _____	_____	<input type="checkbox"/> 0.0%	_____	
	0	= Total Cover		
Sapling/Shrub Stratum (Plot size: <u>10 ft dia</u>)				Prevalence Index worksheet:
1. <u>Populus balsamifera</u>	80	<input checked="" type="checkbox"/> 76.2%	FAC	Total % Cover of: _____ Multiply by: _____
2. <u>Physocarpus capitatus</u>	10	<input type="checkbox"/> 9.5%	FACW	OBL species <u>0</u> x 1 = <u>0</u>
3. <u>Lonicera involucrata</u>	10	<input type="checkbox"/> 9.5%	FAC	FACW species <u>10</u> x 2 = <u>20</u>
4. <u>Rosa nutkana</u>	5	<input type="checkbox"/> 4.8%	FAC	FAC species <u>95</u> x 3 = <u>285</u>
5. _____	0	<input type="checkbox"/> 0.0%	_____	FACU species <u>0</u> x 4 = <u>0</u>
	105	= Total Cover		UPL species <u>0</u> x 5 = <u>0</u>
Herb Stratum (Plot size: <u>5 ft dia</u>)				Column Totals: <u>105</u> (A) <u>305</u> (B)
1. _____	0	<input type="checkbox"/> 0.0%	_____	Prevalence Index = B/A = <u>2.905</u>
2. _____	0	<input type="checkbox"/> 0.0%	_____	
3. _____	0	<input type="checkbox"/> 0.0%	_____	
4. _____	0	<input type="checkbox"/> 0.0%	_____	
5. _____	0	<input type="checkbox"/> 0.0%	_____	
6. _____	0	<input type="checkbox"/> 0.0%	_____	
7. _____	0	<input type="checkbox"/> 0.0%	_____	
8. _____	0	<input type="checkbox"/> 0.0%	_____	
9. _____	0	<input type="checkbox"/> 0.0%	_____	
10. _____	0	<input type="checkbox"/> 0.0%	_____	
11. _____	0	<input type="checkbox"/> 0.0%	_____	
	0	= Total Cover		
Woody Vine Stratum (Plot size: <u>5 ft dia</u>)				
1. _____	_____	<input type="checkbox"/> 0.0%	_____	
2. _____	_____	<input type="checkbox"/> 0.0%	_____	
	0	= Total Cover		
% Bare Ground in Herb Stratum: <u>100</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-sp8

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		
0-20	2.5Y	5/2	80	2.5Y	4/1	15	D	M	Silt Loam	concentration is prominent
				7.5YR	4/6	5	C	M/PL		

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:
 Mapped soils are hydric

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 to 20 inches. Does not meet a hydrology indicator.

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

Project/Site: Springbrook Creek Unit C City/County: Renton/King Sampling Date: 17-Apr-14
 Applicant/Owner: WSDOT State: WA Sampling Point: w1-sp9
 Investigator(s): Doug Littauer, Tom Mohagen Section, Township, Range: S 25 T 23N R 4E
 Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): convex Slope: 15.0 % / 8.5 °
 Subregion (LRR): LRR A Lat.: 47.451 Long.: -122.235 Datum: NAD83HARN
 Soil Map Unit Name: Puyallup fine sandy loam NWI classification: PSS

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

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

Remarks:
 Wetter than normal conditions characterize the 3 month period prior to field work (Appendix B-1).

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status	Dominance Test worksheet:
Tree Stratum (Plot size: <u>20 by 10 feet</u>)				Number of Dominant Species That are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)
1. _____	_____	<input type="checkbox"/> 0.0%	_____	
2. _____	_____	<input type="checkbox"/> 0.0%	_____	
3. _____	_____	<input type="checkbox"/> 0.0%	_____	
4. _____	_____	<input type="checkbox"/> 0.0%	_____	
0 = Total Cover				
Sapling/Shrub Stratum (Plot size: <u>20 ft dia</u>)				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>35</u> x 3 = <u>105</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>255</u> (B) Prevalence Index = B/A = <u>2.318</u>
1. <u>Salix sitchensis</u>	<u>75</u>	<input checked="" type="checkbox"/> 68.2%	<u>FACW</u>	
2. <u>Populus balsamifera</u>	<u>30</u>	<input checked="" type="checkbox"/> 27.3%	<u>FAC</u>	
3. <u>Rosa nutkana</u>	<u>5</u>	<input type="checkbox"/> 4.5%	<u>FAC</u>	
4. _____	<u>0</u>	<input type="checkbox"/> 0.0%	_____	
5. _____	<u>0</u>	<input type="checkbox"/> 0.0%	_____	
110 = Total Cover				
Herb Stratum (Plot size: <u>5 ft dia</u>)				
1. _____	_____	<input type="checkbox"/> 0.0%	_____	
2. _____	_____	<input type="checkbox"/> 0.0%	_____	
3. _____	_____	<input type="checkbox"/> 0.0%	_____	
4. _____	_____	<input type="checkbox"/> 0.0%	_____	
5. _____	_____	<input type="checkbox"/> 0.0%	_____	
6. _____	_____	<input type="checkbox"/> 0.0%	_____	
7. _____	_____	<input type="checkbox"/> 0.0%	_____	
8. _____	_____	<input type="checkbox"/> 0.0%	_____	
9. _____	_____	<input type="checkbox"/> 0.0%	_____	
10. _____	_____	<input type="checkbox"/> 0.0%	_____	
11. _____	_____	<input type="checkbox"/> 0.0%	_____	
0 = Total Cover				
Woody Vine Stratum (Plot size: <u>5 ft dia</u>)				
1. _____	_____	<input type="checkbox"/> 0.0%	_____	
2. _____	_____	<input type="checkbox"/> 0.0%	_____	
0 = Total Cover				
% Bare Ground in Herb Stratum: <u>100</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-sp9

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

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

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

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

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	Indicators for Problematic Hydric Soils³:
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except in MLRA 1)	
<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)	

2 cm Muck (A10)
 Red Parent Material (TF2)
 Other (Explain in Remarks)

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

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

Hydric Soil Present? Yes No

Remarks:
 Soils meet hydric soil criteria due to prolonged inundation during the growing season.

Hydrology

Wetland Hydrology Indicators:

<u>Primary Indicators (minimum of one required; check all that apply)</u>		<u>Secondary Indicators (minimum of two required)</u>
<input checked="" 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 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 checked="" 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 checked="" type="radio"/> No <input type="radio"/>	Depth (inches):	<input type="text" value="2"/>	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" value="0"/>	
Saturation Present? (includes capillary fringe)	Yes <input checked="" type="radio"/> No <input type="radio"/>	Depth (inches):	<input type="text" value="0"/>	

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

Remarks:

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

Project/Site: Springbrook Creek Unit C City/County: Renton/King Sampling Date: 17-Apr-14
 Applicant/Owner: WSDOT State: WA Sampling Point: w1-sp10
 Investigator(s): Doug Littauer, Tom Mohagen Section, Township, Range: S 25 T 23N R 4E
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): none Slope: 15.0 % / 8.5 °
 Subregion (LRR): LRR A Lat.: 47.451 Long.: -122.235 Datum: NAD83HARN
 Soil Map Unit Name: Puyallup fine sandy loam NWI classification: Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <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 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 characterize the 3 month period prior to field work (Appendix B-1). Placement of boundary determined by presence/absence of wetland hydrology indicators. Soils and vegetation are present in this location but hydrology indicators are lacking even during a

VEGETATION - Use scientific names of plants.

Stratum	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status	Dominance Test worksheet:
Tree Stratum (Plot size: 20 by 10 feet)				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)
1. <u>Populus balsamifera</u>	70	<input checked="" type="checkbox"/> 100.0%	FAC	
2. _____	0	<input type="checkbox"/> 0.0%	_____	
3. _____	0	<input type="checkbox"/> 0.0%	_____	
4. _____	0	<input type="checkbox"/> 0.0%	_____	
70 = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>45</u> x 2 = <u>90</u> FAC species <u>110</u> x 3 = <u>330</u> FACU species <u>5</u> x 4 = <u>20</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>160</u> (A) <u>440</u> (B) Prevalence Index = B/A = <u>2.750</u>
Sapling/Shrub Stratum (Plot size: 15 by 10 feet)				
1. <u>Rosa nutkana</u>	30	<input checked="" type="checkbox"/> 37.5%	FAC	
2. <u>Physocarpus capitatus</u>	30	<input checked="" type="checkbox"/> 37.5%	FACW	
3. <u>Cornus alba</u>	10	<input type="checkbox"/> 12.5%	FACW	
4. <u>Lonicera involucrata</u>	10	<input type="checkbox"/> 12.5%	FAC	
5. _____	0	<input type="checkbox"/> 0.0%	_____	
80 = Total Cover				
Herb Stratum (Plot size: 5 ft dia)				
1. <u>Epilobium ciliatum</u>	5	<input checked="" type="checkbox"/> 50.0%	FACW	
2. <u>Rubus armeniacus</u>	5	<input checked="" type="checkbox"/> 50.0%	FACU	
3. _____	0	<input type="checkbox"/> 0.0%	_____	
4. _____	0	<input type="checkbox"/> 0.0%	_____	
5. _____	0	<input type="checkbox"/> 0.0%	_____	
6. _____	0	<input type="checkbox"/> 0.0%	_____	
7. _____	0	<input type="checkbox"/> 0.0%	_____	
8. _____	0	<input type="checkbox"/> 0.0%	_____	
9. _____	0	<input type="checkbox"/> 0.0%	_____	
10. _____	0	<input type="checkbox"/> 0.0%	_____	
11. _____	0	<input type="checkbox"/> 0.0%	_____	
10 = Total Cover				
Woody Vine Stratum (Plot size: 5 ft dia)				
1. _____	_____	<input type="checkbox"/> 0.0%	_____	
2. _____	_____	<input type="checkbox"/> 0.0%	_____	
0 = Total Cover				
% Bare Ground in Herb Stratum: <u>90</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-sp10

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		
0-4	10YR	2/1	100					Silt Loam	
4-20	10YR	5/2	90	10YR	5/6	10	C	Sandy Loam	prominent concentrations

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 checked="" 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) (MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Dry Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Drift deposits (B3)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input checked="" type="checkbox"/> FAC-neutral Test (D5)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Surface Soil Cracks (B6)	<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 to 20 inches. Does not meet a hydrology indicator.

Appendix B — Precipitation Data

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

Monthly precipitation data for Kent, Washington.

		Long-term rainfall records ^a			Rain fall ^a	Condition dry, wet, normal ^b	Condition Value	Month weight value	Product of previous two columns
Month	3 yrs. in 10 less than	Average	3 yrs. in 10 more than						
1 st prior month	Mar	3.08	4.08	4.76	8.21	W	3	3	9
2 nd prior month	Feb	2.86	4.47	5.39	5.89	W	3	2	6
3 rd prior month	Jan	3.89	5.30	6.23	3.61	D	1	1	1
Sum								16	16

^aNRCS 2014

^b Conditions are considered normal if they fall within the low and high range around the average.

Note: If sum is

- 6 - 9 then prior period has been drier than normal
- 10 - 14 then period has been normal
- 15 - 18 then period has been wetter than normal

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, Kent, Washington

Date (2014)	Daily Precipitation (inches) ^a
Apr 16	M ^b
Apr 15	0.00
Apr 14	0.00
Apr 13	0.00
Apr 12	0.00
Apr 11	0.00
Apr 10	0.00
Apr 9	0.07
Apr 8	0.15
Apr 7	0.00
Apr 6	M

^a NOAA 2014

^b "M" indicates missing data

Literature Cited

1. Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Vicksburg (MS): US Army Engineer Waterways Experiment Station. Technical Report Y-87-1.
2. [NRCS] Natural Resource Conservation Service [Internet]. 2002. Climate Information – Wetlands Retrieval for Washington. US Department of Agriculture. [cited 2013 Jan 17]. Available at: <http://www.wcc.nrcs.usda.gov/cgibin/getwetco.pl?state=wa>
3. United States Army Corps of Engineers. 2006. Department of the Army Permit Number 200600100.
4. United States 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_finalsupp.pdf
5. Washington State Department of Transportation (WSDOT). 2006. Springbrook Creek Wetland and Habitat Mitigation Bank Instrument. I-405 Corridor Program.
6. Washington State Department of Transportation (WSDOT). 2009. I-405 Springbrook Creek Wetland and Habitat Mitigation Bank Units C As-Built Report.
7. Washington State Department of Transportation (WSDOT). 2010. Revised: I-405 Springbrook Creek Wetland and Habitat Mitigation Bank Units C As-Built Report.
8. Washington State Department of Transportation (WSDOT) WSDOT Wetland Mitigation Site Monitoring Methods (12 June 2008). <http://www.wsdot.wa.gov/NR/rdonlyres/C211AB59-D5A2-4AA2-8A76-3D9A77E01203/0/MethodsWhitePaper052004.pdf>