DRAFT WETLAND AND STREAM ASSESSMENT REPORT

I-405, Brickyard Inline Transit Station Project

King County, WA

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Washington State
Department of Transportation

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Prepared By:

Shelby Reibel, Environmental Scientist
I-405 Team
(425) 456-8520

Maki Dalzell, Environmental Scientist
I-405 Team
(425) 450-6322

Project Engineer:

Caroline Barnett, Project Manager
I-405 Team
(425) 456-8507

Executive Summary

The Washington State Department of Transportation and Federal Highway Administration propose to realign and widen Interstate 405 (I-405) to create a median inline freeway station to be used by Sound Transit's Bus Rapid Transit system. A pedestrian bridge would span I-405 and connect the inline station with the existing Brickyard Park and Ride located on the west side of I-405. Bus-only access ramps would connect the inline station with the center express toll lanes to allow transit service to remain in the express toll lanes longer, reducing travel times and improving reliability. The I-405, Brickyard Inline Transit Station Project (Project) would also replace the existing Juanita Creek culvert with a restored stream connection under I-405. The Project begins at approximately milepost 21.4 of I-405 and ends at approximately milepost 23.3.

The entire study area for the wetland and stream assessment for the Project lies within the Lake Washington/Cedar/Sammamish Watershed (Water Resource Inventory Area 8). Two Category III wetlands (Wetlands 21.94R and 22.24L), totaling 0.45 acre, were delineated within the study area. Wetland 22.11R is a Category III wetland located just outside the study area. Wetlands 22.11R and 22.24L are hydrogeomorphically classified as depressional wetlands; Wetland 21.94R has a riverine hydrogeomorphic classification. Wetlands 21.94R and 22.24L have Cowardin classes of palustrine scrub-shrub and palustrine forested, and Wetland 22.11R has a Cowardin class of palustrine scrub-shrub. Four streams are present within the study area. They are identified as: Juanita Creek, Stream 22.25L, Stream KL14, and Stream 42. Streams within the study area are designated by local jurisdictions as fish bearing (Juanita Creek) and perennial non-fish bearing (Stream KL14 and Stream 42). The City of Bothell has not designated a stream type for Stream 22.25L. Streams in the study area have been somewhat altered to accommodate development in a highly urbanized area. No jurisdictional ditches were identified within the study area.

Table of Contents

Figures

Tables

Appendices

Acronyms and Abbreviations

BMC	Bothell Municipal Code
BRT	Bus Rapid Transit
Ecology	Washington State Department of Ecology
HGM	hydrogeomorphic
I-405	Interstate 405
KZC	Kirkland Zoning Code
MP	milepost
NRCS	Natural Resources Conservation Service
OHWM	ordinary high water mark
PFO	palustrine forested
PSS	palustrine scrub-shrub
SR	State Route
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
WAC	Washington Administrative Code
WDFW	Washington State Department of Fish and Wildlife
WSDOT	Washington State Department of Transportation
WRIA	Water Resource Inventory Area

Chapter 1. Introduction

The Washington State Department of Transportation (WSDOT) and Federal Highway Administration propose to realign and widen Interstate 405 (I-405) between milepost (MP) 21.4 and MP 23.3 to create a median inline freeway station to be used by Sound Transit's Bus Rapid Transit (BRT) system. The I-405, Brickyard Inline Transit Station Project (Project) would expand the median by shifting the northbound and southbound mainline lanes. The Project would then add the inline transit station and bus-only ramps within the expanded median and would construct a pedestrian bridge to connect the inline station to both sides of the freeway. The Project would also provide a fish barrier correction at the I-405 crossing of Juanita Creek at MP 21.94.

The purpose of this Wetland and Stream Assessment Report is to establish a wetland and stream study area for the Project and to identify and describe wetlands, streams, and their associated buffers within the study area. This report is intended to document wetland and stream boundary determinations for review by regulatory authorities and provide background information for wetland mitigation reports. Additionally, the information presented in this report describes sensitive habitats within the project corridor and assists Project engineers and designers in avoiding and/or minimizing impacts on wetlands and streams during the design process. The findings presented in this report can also be used to support future projects that occur partially or entirely within the study area.

This report documents existing conditions within the study area and will provide support for Project permitting, including, but not limited to:

- National Environmental Policy Act/State Environmental Policy Act
- Hydraulic Project Approval
- Clean Water Act permits
- Coastal Zone Management Act Certification
- Any applicable permit required by the local jurisdiction

Chapter 2. Proposed Project

This chapter presents an overall description of the Project, including its location and key elements.

2.1 Location

The Project generally includes a 2-mile segment of I-405 extending from north of Kingsgate Park to just south of the I-405/State Route (SR) 522 interchange (Figure 1). The Project is located within the cities of Kirkland and Bothell, Washington (Sections 8, 16, 17, 20, and 21 in Township 26 North and Range 5 East). The southern limit of the Project is at approximately MP 21.4, and the northern limit is at approximately MP 23.3. The Project lies within the Lake Washington/Cedar/Sammamish watershed, Water Resource Inventory Area (WRIA) 8, and Hydraulic Unit Code 171100120400.

2.2 Project Description

The Project would realign and widen I-405 between MP 21.4 and MP 23.3 to create a median inline freeway station to be used by Sound Transit's BRT system. The Project would expand the width of the existing freeway by shifting the northbound and southbound mainline lanes outward. The outer edges of the existing I-405 roadway prism would be reconstructed, and some new impervious surface area would be added. The Project would add the new transit inline station and bus-only ramps within the expanded freeway median and would construct a pedestrian bridge to connect the inline station platforms to the Brickyard Park and Ride. The portion of the pedestrian bridge connecting to the east side of I-405 is not currently funded and may not ultimately be constructed, but this element is assumed to be constructed in the Project environmental analyses. The Project would also reconstruct the existing highway drainage system using the accepted best management practices outlined in the WSDOT *Highway Runoff Manual* (WSDOT 2019).

The Project would correct a fish barrier at the I-405 crossing of Juanita Creek at MP 21.94. The existing structure at Juanita Creek has been identified as a fish barrier by the Washington Department of Fish and Wildlife (WDFW) and WSDOT Environmental Services Office (WDFW Site ID 998602) due to a water surface drop and velocity. The Project would replace the existing corrugated steel pipe with a restored stream connection. The proposed structure would meet the requirements of the federal injunction in *United States et al. vs. Washington et al.* No. C70-9213, Subproceeding No. 01-1, dated March 29, 2013, by using the stream simulation methodology outlined in the 2013 WDFW Water Crossing Design Guidelines and commitments made among WSDOT, WDFW, the National Marine Fisheries Service, and the Muckleshoot Indian Tribe Fisheries Division during preliminary Project design and permitting. The Project would be completed by December 2025.

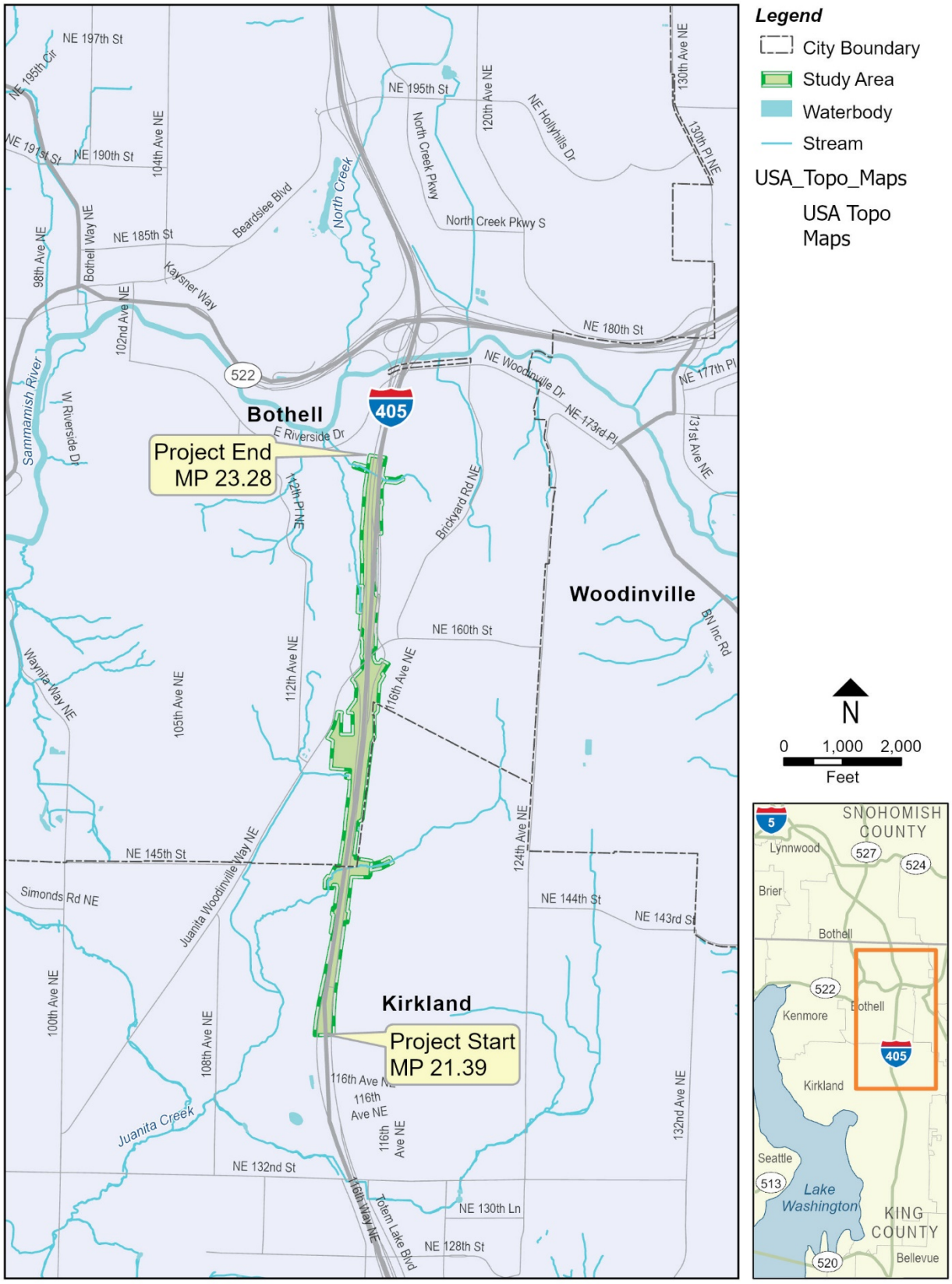

Figure 1. Project Vicinity and Study Area Map

Chapter 3. Methods

This chapter summarizes the methods used to comply with WSDOT, federal, state, and local regulations and guidance. Additional details regarding the methods used to prepare this report are provided in Appendix A, Methods and Tools.

3.1 Study Area

WSDOT defined the study area by reviewing the maximum extent of the proposed Project footprint, including the median inline freeway station and potential fish barrier correction locations. The study area includes areas along I-405 from MP 21.4 to MP 23.3 (Figure 1, Figure 2a, Figure 2b). The study area includes the Project footprint as well as areas where additional Project improvements could occur to ensure that WSDOT assessed wetlands, streams, and other natural habitats that could be affected by the Project. For the median inline freeway station, the study area is mostly limited to the existing WSDOT right of way because the stations and new ramps would be constructed within the existing pavement. WSDOT also assessed 300 feet upstream and downstream of all known cross culverts within the study area (Stream 42 and Juanita Creek) because the fish barrier status of cross culverts in the Project footprint was not determined at the time of field investigations.

3.2 Wetlands

WSDOT made wetland determinations using field-documented characteristics and data from previously delineated wetlands, in conjunction with data from the National Wetlands Inventory maps developed by the U.S. Fish and Wildlife Service (USFWS 2019), the Natural Resources Conservation Service (NRCS) web soil survey, and aerial photographs. Fieldwork included delineating wetlands; assigning wetland ratings; and recording observations of soils, hydrology, and vegetation, as well as landscape position and general site conditions.

Two of the wetlands addressed in this report (Wetlands 21.94R and 22.11R) were previously delineated as part of WSDOT's SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project. Those wetlands were delineated in March 2019 but are included in this report because part of the Project study area overlaps with the study area for the SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project. The *SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project Wetland and Stream Assessment Report* (WSDOT 2020) provides more information for the previous delineation and assessment.

Wetland fieldwork for the Project was conducted in November 2019. Wetland 22.24L and the eastern portion of Wetland 21.94R were delineated on November 13, 2019. The eastern portion of Wetland 21.94R was delineated because the Project study area extends outside of the WSDOT ROW along Juanita Creek, and that area was not included in the previous (March 2019) delineation.

WSDOT identified wetlands in accordance with the *Regional Supplement to the U.S. Army Corps of Engineers Wetlands Delineation Manual: Western Mountains, Valleys, and Coast Region* (USACE 2010). The boundaries of jurisdictional wetlands occurring within and next to the study area were delineated by placing sequentially-numbered flags to define wetland

boundaries, which were subsequently surveyed. Wetland locations and identifying features are described in Chapter 4 and are shown on Existing Conditions Plan Sheets in Appendix C.

The Regional Delineation Supplement (USACE 2010) recommends using methods described in Chapter 19 of the *Engineering Field Handbook* (NRCS 2015) to determine if precipitation occurring in the three full months prior to the site visit was normal, drier than normal, or wetter than normal. Actual rainfall is compared to the normal range of the 30-year average. Precipitation conditions are included in Appendix B.

This report describes wetlands by location from south to north. Each wetland was assigned a unique name based on its location relative to the nearest I-405 MP. The wetland number includes the following designations:

- "L" if the wetland is located adjacent to the southbound lanes of I-405
- "R" if the wetland is located adjacent to the northbound lanes of I-405

The study area for the wetland assessment is located within the city limits of Kirkland and Bothell. City of Kirkland Zoning Code (KZC) 90.55 and City of Bothell Municipal Code (BMC) 14.04.500 indicate that wetlands within their jurisdictions should be rated using the *Washington State Wetland Rating System for Western Washington: 2014 Update* (Hruby 2014), referred to as the Washington State Department of Ecology (Ecology) rating system. The Ecology rating system includes a functional assessment for water quality, hydrologic, and habitat functions of the wetlands. KZC 90.55, Table 90.55.1 and BMC 14.04.530(F)1 provide wetland and associated buffer standards for rating, delineation, buffer width determination, and other elements. For both jurisdictions, wetland buffer widths are determined by the wetland rating and habitat score. According to WSDOT guidance, existing elevated road prisms are not treated as wetlands, streams, or their buffers, except where the local jurisdiction requires WSDOT to do so (WSDOT 2008). Therefore, all wetland buffers were cut at the toe of the road prism.

Using the Ecology rating system, WSDOT qualitatively assessed the condition of wetlands and wetland buffers using:

- Dominant land use (e.g., agriculture, residential, commercial, industrial)
- Dominant buffer vegetation type (tree, shrub, herb, vine, unvegetated)
- Presence of invasive plants by species

Wetland functions for wetlands within and next to the study area were evaluated using the Ecology wetland rating form and were rated as Category I, II, III, or IV (Hruby 2014). Category I is considered the highest functioning wetland, and Category IV is considered the lowest functioning wetland. To determine an accurate assessment of a wetland's functional values, function scores were calculated based on the entire wetland system, when applicable, not just the delineated portion of wetland within the study area.

The WSDOT Wetland Functions Characterization Tool for Linear Projects (Best Professional Judgment tool) manual (Null et al. 2000) was also used to characterize the functions provided by each potentially affected wetland. The Best Professional Judgment tool is a qualitative tool allowing for rapid characterization of wetland functions, evaluating water quality functions, hydrologic functions, habitat functions, and special characteristics. A table summarizing the functions and values for each potentially affected wetland is provided in Appendix F.

3.3 Streams

Streams in the study area were assessed to delineate their ordinary high water marks (OHWMs). Stream fieldwork was conducted from November 13, 2019, to December 20, 2019. WSDOT walked the entire study area and compared field observations to City of Bothell, City of Kirkland, and King County stream data to verify existing stream alignments and stream conditions.

For each stream identified within the study area, WSDOT determined the OHWM using the definition in the Washington Administrative Code (WAC) Section 222-16-010 and the methods described in Ecology's publication *Determining the Ordinary High Water Mark for Shoreline Management Act Compliance in Washington State* (Anderson et al. 2016). The City of Kirkland and City of Bothell have adopted the WAC definition for the OHWM, as indicated in KZC 5.10.611 and BMC 13.03.010.

WSDOT coordinated with WDFW to review existing data and conduct field visits to determine potential fish use for streams within the study area. Fish use potential is based on criteria defined in the WDFW Fish Passage Inventory, Assessment, and Prioritization Manual (WDFW 2019b). Fish use potential does not indicate that there are fish documented in the stream, only that the existing habitat could potentially support fish use. WSDOT uses WDFW fish use potential determinations to plan fish barrier corrections in accordance with the federal injunction in *United States et al. vs. Washington et al.* No. C70-9213, Subproceeding No. 01-1, dated March 29, 2013 (WDFW 2019a).

The Cities of Bothell and Kirkland both classify streams in accordance with WAC 222-16-030, which defines stream classifications as:

- Type S – all waters inventoried as "shorelines of the state," including periodically inundated areas of their associated wetlands
- Type F – segments of natural waters that in any case contain fish habitat
- Type Np – all segments of natural waters that are perennial, non-fish habitat streams
- Type Ns – all segments of natural waters that are seasonal, non-fish habitat streams in which surface flow is not present for at least some portion of a year of normal rainfall

In some cases, a local jurisdiction's stream typing may vary from WDFW fish use potential classifications due to the use of different methods. For the purposes of this report and describing current stream conditions, WSDOT has included stream types determined by local jurisdictions and potential fish use determined by WDFW for each stream within the study area (see Section 4.3). Additional information about streams is provided in in Section 4.3.

3.4 Jurisdictional Ditches

Jurisdictional determination of ditches was based on criteria described in the 2015 Waters of the United States (WOTUS) Clean Water Rule for determining U.S. Army Corps of Engineers (Corps) jurisdiction under Section 404 of the Clean Water Act (CWA). The 2015 WOTUS Rule defines the jurisdiction over ditches differently than the previous rule, which was based on criteria described in the joint memorandum, "Clean Water Act (CWA) Jurisdiction Following the U.S. Supreme Court's Decision in *Rapanos v. United States & Carabell v. United States*," (signed December 2, 2008) issued by the Corps and the U.S. Environmental Protection Agency

(EPA). Under the 2015 WOTUS Rule, ditches dug in uplands to move stormwater are only jurisdictional if they drain to a regulated WOTUS and have a defined bed and bank and ordinary high water mark (OHWM). These ditches are considered tributaries. Ditches dug in wetlands or that convey streams are also under Corps jurisdiction (WSDOT 2019).

The 2015 WOTUS Rule states that the Corps has jurisdiction over discharges into Traditional Navigable Waters, interstate waters, territorial seas, impoundments of WOTUS, tributaries (including some ditches), and waters with a case-specific significant nexus. The Corps generally will not assert jurisdiction over swales or erosional features (e.g., gullies, small washes characterized by low volume, infrequent, or short duration flow), or roadside ditches excavated wholly in and draining only uplands and that do not carry a relatively permanent flow of water.

WSDOT conducted field investigations from November 13 to December 20, 2019. Ditches were evaluated within the study area. Work occurred prior to the final rule issued December 23, 2019, to repeal the 2015 WOTUS Rule. The following indicators were used to determine the presence of jurisdictional ditches:

- Areas showing scour marks or evidence of occasional flow
- Areas lacking vegetation
- Presence of a defined channel (bed/bank)
- Areas of flowing or standing water

Chapter 4. Existing Conditions

This chapter describes the existing conditions in the study area specific to the overall landscape setting, wetlands, and streams.

4.1 Landscape Setting

The study area is in the Lake Washington/Cedar/Sammamish watershed, WRIA 8, which is in western Washington. The watershed drains approximately 692 square miles and includes two major river systems (Cedar and Sammamish) and three large lakes (Union, Washington, and Sammamish). The study area contains two basins in WRIA 8: Juanita Creek and the Sammamish River. Juanita Creek and the Sammamish River drain into Lake Washington. In general, rainfall in the northern half of the study area flows northwest into the Sammamish River basin, and rainfall in the southern half of the study area flows southwest into Juanita Creek basin.

The study area is located within an urbanized, highly developed area where land uses include commercial and residential structures. According to the 2017 WRIA 8 Salmon Conservation Plan (Rheaume and Stokes 2017), the Lake Washington/Cedar/Sammamish watershed is the most populous watershed in Washington State. As of 2017, the human population of the watershed was approximately 1.4 million. The municipal drinking water supply for the City of Seattle is supplied by a large portion of the upper Cedar River watershed and is managed under a Habitat Conservation Plan. Between 2010 and 2017, the population in the central Puget Sound region, including King, Kitsap, Pierce, and Snohomish counties, and their 82 cities and towns, increased by 10 percent to 4.1 million people. Forecasts project this number to increase to nearly 5.8 million people by 2050 (PSRC 2019). The Muckleshoot Indian Tribe, Sauk-Suiattle Indian Tribe, Snoqualmie Tribe, Stillaguamish Tribe of Indians, Yakama Nation, and Duwamish Tribe have usual and accustomed fishing places in WRIA 8.

4.2 Wetlands

4.2.1 Overview

Two Category III wetlands, totaling 0.45 acre, were delineated within the study area (Figure 2). Wetland 22.11R is a Category III wetland located directly outside the study area (it is addressed in this report because its buffers may be affected by the Project). Two of the wetlands (Wetland 22.11R and Wetland 22.24L) have hydrogeomorphic (HGM) classifications of depressional; the third (Wetland 21.94R) has a riverine HGM classification. All three wetlands extend beyond the Project footprint and continue outside of the study area. Table 1 provides a summary of the total acreage of each wetland by classification system: USFWS, Ecology, and HGM. Refer to Figure 2 for locations of Wetlands 21.94, 22.11R, and 22.24L.

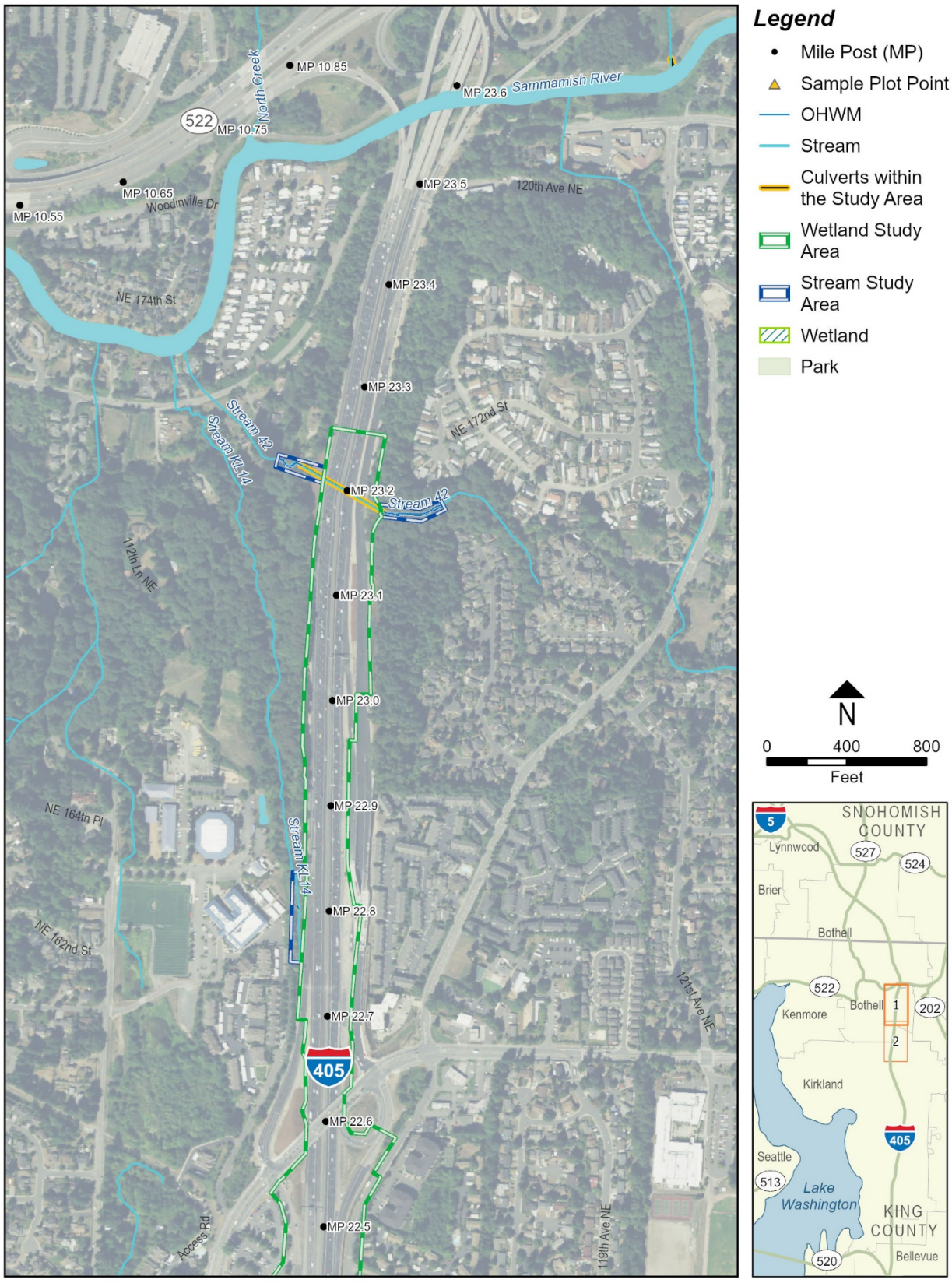

Figure 2a. Wetlands and Streams Within and Next to the Study Area

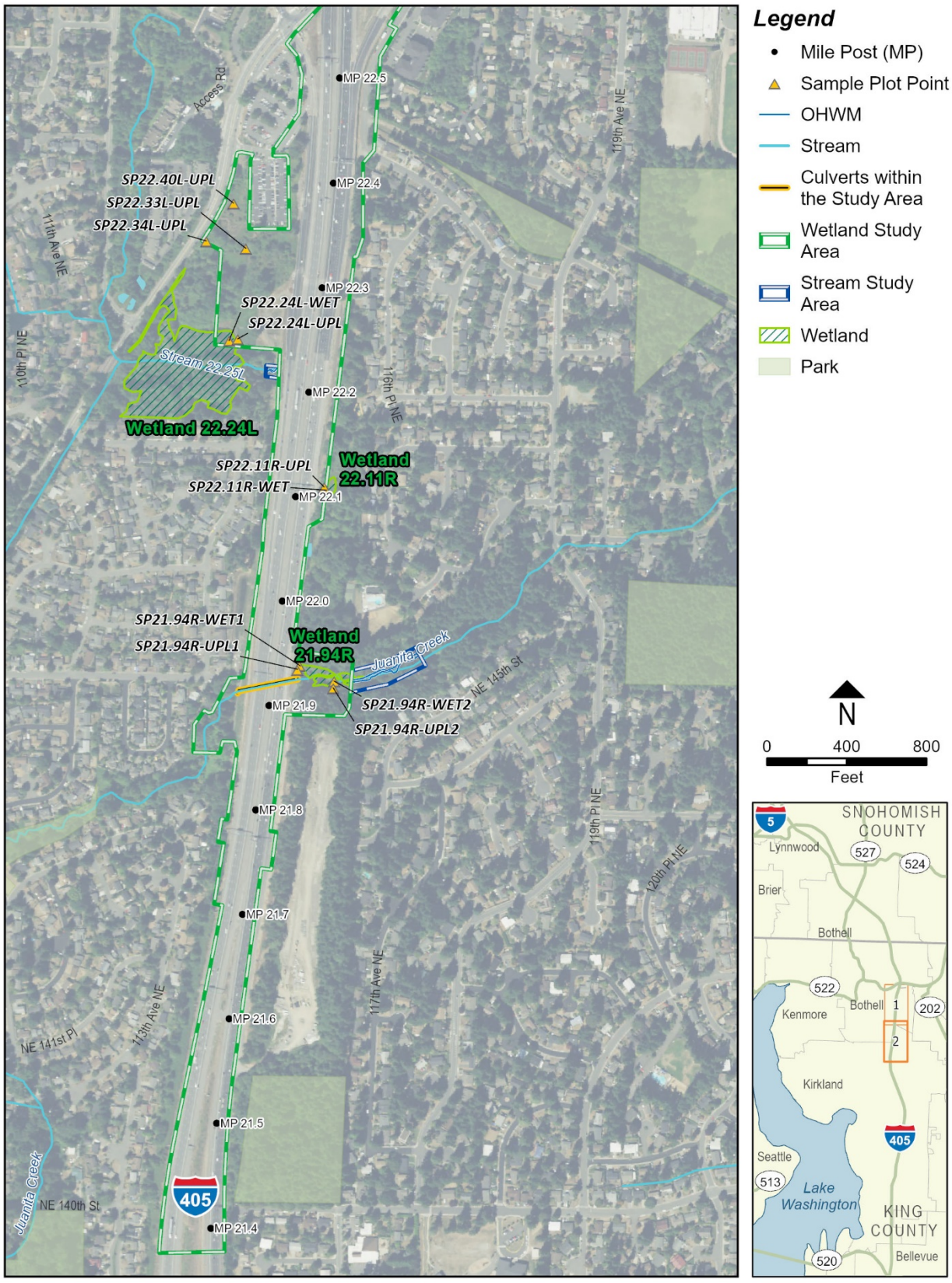

Figure 2b. Wetlands and Streams Within and Next to the Study Area

Table 1. Wetland Summary by Classification

Classification System	Class	Area (acres)	Percent of Total Area
U.S. Fish and Wildlife Service (Cowardin et al. 1979)	PEM	0	0
	PSS	1.25	24
	PFO	4.01	76
	PAB	0	0
	Total	**5.26**	**100**
Washington State Department of Ecology (Hruby 2014)	I	0	0
	II	0	0
	III	5.26	100
	IV	0	0
	Total	**5.26**	**100**
Local Jurisdiction (Hruby 2014)	I	0	0
	II	0	0
	III	5.26	100
	IV	0	0
	Total	**5.26**	**100**
Hydrogeomorphic Class	Depressional	4.95	94
	Riverine	0.31	6
	Slope	0	0
	Total	**5.26**	**100**

PAB = palustrine aquatic bed; PEM = palustrine emergent; PFO = palustrine forested; PSS = palustrine scrub-shrub

Wetland 21.94R is located along Juanita Creek upstream of the I-405 crossing along the northbound lanes of I-405. Wetland 22.11R is approximately 850 feet north of Wetland 21.94R, along the northbound lanes of I-405. Wetland 22.24L is located west of I-405 and approximately 500 feet south of the Brickyard Park and Ride.

Table 2 summarizes the wetlands delineated within and next to the study area, including their size, buffer width, Cowardin class, HGM class, Ecology rating, and local jurisdiction rating. Wetland 22.11R is not in the study area; however, it is addressed in this report because its buffers may be affected by the Project. As mentioned previously, Wetland 22.11R was delineated as part of the SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project.

Table 2. Wetlands Within and Next to the Study Area

Wetland[a]	Wetland Classification/Rating					Total Wetland Size (acres)	Wetland Size in the Study Area (acres)	Buffer Width (feet)[e]
	Cowardin[b]	HGM	Ecology Rating[c]	Local Jurisdiction	Local Jurisdiction Rating[d]			
21.94R	PSS/PFO	Riverine	III	Kirkland	III	0.31	0.30	105
22.11R	PSS	Depressional	III	Kirkland	III	0.07	0.00	60
22.24L	PSS/PFO	Depressional	III	Bothell	III	4.88	0.15	75
Total						**5.26**	**0.45**	**–**

[a] Wetlands listed from south to north.

[b] Cowardin et al. (1979) or National Wetlands Inventory class based on vegetation: PSS = palustrine scrub-shrub; PFO = palustrine forested.

[c] Ecology rating according to Hruby (2014).

[d] Wetlands rated according to City of Kirkland Wetlands Ordinance described in Kirkland Zoning Code (KZC) 90.55 and City of Bothell Wetlands Ordinance described in Bothell Municipal Code (BMC) 14.04.500.

[e] Wetland buffer width according to City of Kirkland Wetlands Ordinance described in KZC 90.55 and City of Bothell Wetlands Ordinance described in BMC 14.04.530(F)1.

Tables 3 through 5 detail the location, rating, buffer width, wetland size, Cowardin and HGM classification, dominant vegetation, soils, hydrology, and wetland functions summary for each wetland. Additional information about the wetlands identified in and next to the study area can be found in the appendices to this report, including:

- Appendix B: Wetland inventory maps (National Wetlands Inventory and local jurisdiction), U.S. Geological Survey topographic maps, a soil survey map, climate conditions, and a list of plant species existing within the study area
- Appendix C: Existing conditions plan sheets showing wetlands and streams within the study area
- Appendix D: Wetland delineation data sheets
- Appendix E: Wetland rating forms
- Appendix F: Wetland functions and values summary tables

Table 3. Wetland 21.94R Summary

WETLAND 21.94R – INFORMATION SUMMARY			
Location	Along Juanita Creek, east of I-405, southwest of NE 148th Place		
		**Local Jurisdiction**	City of Kirkland
		WRIA	8
		Ecology Rating (Hruby 2004)	Category III
		City of Kirkland Rating (KZC 905.55.1)	Category III
		City of Kirkland Buffer Width	105 feet
		Wetland Size in Study Area	0.30 acre
		Cowardin Classification	PSS/PFO
		HGM Classification	Riverine
		Wetland Data Sheet(s)	SP 21.94R-WET1 and SP 21.94R-WET2
		Upland Data Sheet(s)	SP 21.94R-UP1 and SP 21.94R-UP2
		Flag Color	Pink
Dominant Vegetation	Wetland 21.94R is composed of a forested and scrub-shrub vegetation community that consists of red alder (*Alnus rubra*) with an understory of salmonberry (*Rubus spectabilis*), Himalayan blackberry (*Rubus armeniacus*), red-osier dogwood (*Cornus sericea*), slough sedge (*Carex obnupta*), lady fern (*Athyrium felix-femina*), twinberry (*Lonicera involucrate*), climbing nightshade (*Solanum dulcamara*), and soft rush (*Juncus effusus*). This wetland is also dominated by a scrub-shrub vegetation community consisting primarily of salmonberry and Himalayan blackberry. Vegetation meets the prevalence index and dominance test for hydrophytic vegetation.		
Soils	Observed soils in Wetland 21.94R consist of 8 inches of very dark grayish brown (10YR 3/2) sandy loam over 12 inches of very dark gray (10YR3/1) sandy loam or 12 inches of very dark grayish brown (2.5Y 3/2) sandy loam with redoximorphic features over 6 inches of dark gray (5Y 4/1) loamy sand with redoximorphic features. Soils in Wetland 21.94R meet the hydric soil indicators for Hydrogen Sulfide (A4) and a Redox Dark Surface (F6).		
Hydrology	At the sample plot locations, soils were saturated to the surface and a water table was present within 12 inches from the surface. Primary sources of hydrology include a high groundwater table and overbank flooding from Juanita Creek.		
Rationale for Delineation	All three wetland criteria are present. The boundaries of Wetland 21.94R were determined by change in vegetation and soils and were flagged where indicators of wetland vegetation, hydric soil, and wetland hydrology were present.		
Rationale for Local Rating	Wetland 21.94R is rated Category III with a score of 8 for water quality, 6 for hydrologic functions, and 5 for habitat functions, scoring 19 points on the wetland rating form.		

WETLAND 21.94R – INFORMATION SUMMARY	
Wetland Functions Summary	
Water Quality	Wetland 21.94R has moderate site potential to improve water quality because the area of surface depression that can trap sediments is greater than half the area of the wetland and over one third of the area of the wetland is trees and shrubs. Wetland 21.94R provides high potential to support the water quality function of the wetland because the wetland and its contributing basin are within an incorporated city. Wetland 21.94R has high water quality value because it discharges directly to Juanita Creek, which is on the 303(d) list.
Hydrologic	Wetland 21.94R has moderate site potential to reduce flooding and erosion as the wetland has some storage capacity available to retain surface water, and more than one third of the wetland is forest and shrub. Surrounding land uses provide high potential to support hydrologic functions of the wetland, and the up-gradient watershed is an incorporated area. Wetland 21.94R has a low hydrologic value because no flooding issues are known to occur downstream of the wetland.
Habitat	Wetland 21.94R has moderate site potential to provide habitat functions for wildlife because it has two plant communities and three hydroperiods. Special habitat features such as large downed woody debris and undercut banks were observed in the wetland. Because the wetland is located along the riparian corridor along Juanita Creek, some undisturbed accessible habitat is present; however, surrounding land uses including highways, local roads, and residential houses limit the potential to support wildlife habitat. Wetland 21.94R provides a moderate value for wildlife as it is located adjacent to Juanita Creek.
Buffer Condition	The buffer west of the wetland is less than 105 feet wide as it is cut off by I-405. The remainder of the buffer is relatively undisturbed and consists primarily of Douglas-fir (*Pseudotsuga menziesii*) and bigleaf maple (*Acer macrophyllum*) with some western red cedar (*Thuja plicata*) present. The understory vegetation includes Himalayan blackberry, salal (*Gaultheria shallon*), and sword fern (*Polystichum munitum*).

Table 4. Wetland 22.11R Summary

WETLAND 22.11R – INFORMATION SUMMARY		
Location	North of Juanita Creek, west of 116th Place NE, east of I-405	
	**Local Jurisdiction**	City of Kirkland
	WRIA	8
	Ecology Rating (Hruby 2004)	Category III
	City of Kirkland Rating (KZC 905.55.1)	Category III
	City of Kirkland Buffer Width	60 feet
	Wetland Size in Study Area	0.00 acre
	Cowardin Classification	PSS
	HGM Classification	Depressional
	Wetland Data Sheet(s)	SP 22.11R-WET
	Upland Data Sheet(s)	SP 22.11R-UP
	Flag Color	Pink
Dominant Vegetation	Wetland 22.11R is dominated by a scrub-shrub vegetation community consisting of salmonberry, red alder and black cottonwood saplings, and Himalayan blackberry. Vegetation meets the prevalence index and dominance test for hydrophytic vegetation.	
Soils	Soils in Wetland 22.11R consist of 14 inches of black (10YR 2/1) silt loam and 4 inches of grayish brown (2.5Y 5/2) loamy sand with redoximorphic features. This sample plot was located at the edge of the wetland as the majority of the wetland is located outside of the WSDOT right of way. With the presence of hydrophytic vegetation and hydrology, the sample plot is assumed to have a continued depleted matrix below 18 inches and assumed to meet the hydric soil indicator for Thick Dark Surface (A12).	
Hydrology	Soils were saturated to 6 inches below the soil surface, and a water table was present at 14 inches in the soil pit. The primary source of hydrology is a high groundwater table.	
Rationale for Delineation	All three wetland criteria are present. The boundaries of Wetland 22.11R were determined by change in vegetation and soils and were flagged where indicators of wetland vegetation, hydric soil, and wetland hydrology were present.	
Rationale for Local Rating	Wetland 22.11R is rated Category III with a score of 7 for water quality, 6 for hydrologic functions, and 3 for habitat functions, scoring 16 points on the wetland rating form.	
Wetland Functions Summary		
Water Quality	Wetland 22.11R has moderate site potential to improve water quality because the wetland is a depression with no outlet and greater than half of the wetland has persistent, ungrazed plants. The wetland has a moderate landscape potential to improve water quality because it receives stormwater discharge and greater than 10 percent of the area within 150 feet of the wetland is in land uses that generate pollutants. Wetland 22.11R has high water quality value because it is located in a basin with resources on the 303(d) list and a Total Maximum Daily Load.	

WETLAND 22.11R – INFORMATION SUMMARY	
Hydrologic	Wetland 22.11R has moderate site potential to reduce flooding because the wetland is a depression with no outlet and the area of the basin is less than 10 times the area of the wetland unit. The wetland has a high landscape potential because the wetland receives stormwater discharge and greater than 10 percent of the area within 150 feet of the wetland is in land uses that generate excess runoff, and more than 25 percent of the contributing basin is covered with intensive human land uses. The wetland has a low value for hydrologic functions because there are no problems with flooding downstream and the wetland has not been identified as important for flood storage.
Habitat	Wetland 22.11R has low site potential to provide habitat for wildlife due to low diversity and lack of habitat interspersion. The wetland has low landscape potential because there is less than 10 percent of accessible habitat within a 1-kilometer radius of the wetland unit and a lot of high intensity land use in the surrounding area. The wetland has a low value because it is not documented to provide habitat for priority species or species listed under the Endangered Species Act.
Buffer Condition	The buffer west of the wetland consists of black cottonwood saplings, Himalayan blackberry, and Kentucky bluegrass (*Poa pratensis*). The remainder of the surrounding buffer consists of red alder and black cottonwood. The understory vegetation is primarily Himalayan blackberry.

Table 5. Wetland 22.24L Summary

WETLAND 22.24L – INFORMATION SUMMARY			
Location	West of I-405 at MP 22.24, east of Juanita Woodinville Way NE		
		**Local Jurisdiction**	City of Bothell
		WRIA	8
		Ecology Rating (Hruby 2004)	Category III
		City of Kirkland Rating (KZC 905.55.1)	Category III
		City of Kirkland Buffer Width	75 feet
		Wetland Size in the Study Area	0.15 acre
		Cowardin Classification	PSS/PFO
		HGM Classification	Depressional
		Wetland Data Sheet(s)	SP 22.24L-WET
		Upland Data Sheet (s)	SP 22.24L-UP
		Flag Color	Pink
Dominant Vegetation	Wetland 22.24L consists of a scrub-shrub and forested community that is dominated by red alder, black cottonwood, Sitka willow (*Salix sitchensis*), salmonberry, and Himalayan blackberry. Vegetation meets the prevalence index and dominance test for hydrophytic vegetation. A portion of the wetland in the study area was created by King County as a wetland mitigation site in 2008.		
Soils	Soils in Wetland 22.24L consist of 7 inches of brown (10YR 4/3) loamy sand over 11 inches of dark grayish brown (10YR 4/2) loamy sand with redoximorphic features. Soils at Wetland 22.24L meet the hydric soil indicator for a Depleted Matrix (F3).		
Hydrology	Stream 22.25L flows through Wetland 22.24L but the primary source of hydrology is a high groundwater table. Hydrology indicators observed include saturation at 7 inches. A water table was observed at 12 inches below the soil surface.		
Rationale for Delineation	All three wetland criteria are present. The boundaries of Wetland 22.24L were determined by a topographic break and were flagged where indicators of wetland vegetation, hydric soil, and wetland hydrology were present.		
Rationale for Local Rating	Wetland 22.24L is rated Category III with a score of 7 for water quality, 6 for hydrologic functions, and 5 for habitat functions, scoring 18 points on the wetland rating form.		
Wetland Functions Summary			
Water Quality	Wetland 22.24L has moderate site potential to improve water quality because it has an intermittently flowing stream (Stream 22.25L) flowing through it and greater than 50 percent of the wetland area has persistent, ungrazed plants. It has moderate landscape potential because the wetland receives stormwater discharge and greater than 10 percent of the area within 150 feet of the wetland is in land uses that generate pollutants. It has a high value for water quality treatment as it discharges (within 1 mile) to Juanita Creek, which on the 303(d) list.		

Hydrologic	Wetland 22.24L has moderate site potential to reduce flooding and erosion because it has an intermittently flowing stream (Stream 22.25L) and its depth of live storage can be up to 3 feet outside of WSDOT right of way. It has a high landscape potential because wetland receives stormwater discharge and greater than 10 percent of the area within 150 feet of the wetland is in land uses that generate excess runoff. It has a low hydrologic support value because there are no flooding concerns downstream of the wetland.
Habitat	Wetland 22.24L has moderate site potential to provide habitat functions for wildlife because it has two plant communities and three hydroperiods. The wetland has low landscape potential primarily because of the high intensity land use that surrounds the area. It has a moderate habitat value because Stream 22.25L flows through the wetland.
Buffer Condition	The buffer west of the wetland is less than 30 feet wide because it is cut off by Juanita Woodinville Way NE. The buffer east of the wetland is between 150 and 250 feet wide and is cut off by I-405. The remainder of the buffer consists of red alder, black cottonwood, Himalayan blackberry, and Scotch broom (*Cytisus scoparius*).

Soils

Soil textures identified by scientists in the wetland sample plots include silt loam, loamy sand, and sandy loam. Wetland sample plots for each wetland exhibited redoximorphic features, except for sample plot 21.94R-WET1. The hydric soil indicators observed in wetlands include Redox Dark Surface (F6), Depleted Matrix (F3), and Hydrogen Sulfide (A4). Additional information about soils can be found on the soil survey maps in Appendix B. Wetland delineation sheets with additional soil information can be found in Appendix D.

Vegetation

Wetland 21.94R is classified as palustrine scrub-shrub (PSS) and palustrine forested (PFO). The northwest portion of the wetland is PFO, with dominant vegetation of red alder (*Alnus rubra*). The southeast portion of the wetland is classified as PSS, and vegetation is dominated by salmonberry (*Rubus spectabilis*), Himalayan blackberry (*Rubus armeniacus*), twinberry (*Lonicera involucrata*), and climbing nightshade (*Solanum dulcamara*).

The entirety of Wetland 22.11R is classified as PSS, and vegetation is dominated by salmonberry and Himalayan blackberry. Wetland 22.24L is classified as PSS and PFO. Vegetation in the PFO portion of the wetland consists of red alder, black cottonwood (*Populus balsamifera*), and Sitka willow (*Salix sitchensis*). Dominant vegetation in the PSS portion of the wetland includes Himalayan blackberry and salmonberry.

Appendix B provides a list of plant species observed within the study area.

Hydrology

All wetlands addressed in this report receive surface runoff from surrounding land uses, including I-405. Juanita Creek flows through Wetland 21.94R; that wetland's primary sources of hydrology are overbank flooding from Juanita Creek and a high groundwater table. Only portions of the wetland next to Juanita Creek receive overbank flooding; the rest of the wetland is saturated only. The primary source of hydrology for Wetland 22.11R is a high groundwater table, and the entire wetland is likely saturated only. Stream 22.25L flows through

Wetland 22.24L, but the primary source of hydrology for that wetland is a high groundwater table. Approximately 40 percent of the southwest portion of Wetland 22.24L is seasonally flooded; the rest of the wetland is likely saturated only.

The wetland hydrology indicators for wetlands addressed in this report are high water table (A2) and saturation (A3), as defined in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (Version 2.0) (USACE 2010). Wetland 22.11R meet the saturation (A3) hydrology indicator criteria, and Wetlands 21.94R and 22.24L meet both the saturation (A3) and high-water table (A2) hydrology indicator criteria. Wetland delineation sheets with additional hydrology information are provided in Appendix D.

4.2.2 Wetland Buffers

All three wetlands addressed in this report have been affected by human influence to some extent, and wetland buffer sizes are limited by their proximity to elements of the built environment. Based on field observations, vegetated buffers within the study area are narrower than the standard buffer widths required by the local jurisdictions. The vegetated buffers are primarily composed of roadside vegetation along I-405, and the remainder of the buffers in three wetlands consist of some coniferous and deciduous trees, such as Douglas-fir (*Pseudotsuga menziesii*), western red cedar (*Thuja plicata*), bigleaf maple (*Acer macrophyllum*), red alder, and black cottonwood. Himalayan blackberry and Scotch broom (*Cytisus scoparius*) are also present in the wetland buffers. Standard buffer widths for Category III wetlands required by the Cities of Kirkland and Bothell range from 60 to 225 feet, depending on the habitat score of each wetland; however, almost all of the wetland buffers are cut off by I-405. The observed extents of the vegetated buffers are shown in Appendix C. Refer to Chapter 3, Methods, for a description of how wetland buffer widths were determined. Buffer conditions for each wetland are summarized in the wetland summary tables (Tables 3 through 5)).

4.2.3 Wetland Functions

Wetland functions for wetlands addressed in this report were evaluated using the Ecology wetland rating form (Hruby 2014). Habitat, hydrologic, and water quality functions were rated following the wetland rating form procedures, and the total of the three function scores was used to categorize the wetlands as either Category I, II, III, or IV. Wetlands 21.94R, 22.11R, and 22.24L were all categorized as Category III. Wetlands 21.94R and 22.24R scored moderately for habitat functions because both wetlands have two Cowardin classes present and a permanently or seasonally flowing stream. Wetland 22.11L scored low for habitat functions because of its proximity to I-405, low diversity, and lack of habitat interspersion. All three wetlands scored moderately for hydrology and improving water quality.

The WSDOT Best Professional Judgment tool (Null et al. 2000) was also used to characterize the functions provided by each potentially affected wetland. Appendix F, Wetland Functions and Values Summary Tables, provides the rationale for each function and value outlined in *Wetland Functions Characterization Tool for Linear Projects* (Null et al. 2000).

4.3 Streams

The entire Project footprint lies within the Lake Washington/Cedar/Sammamish Watershed (WRIA 8), and there are four streams present within the study area: Juanita Creek,

Stream 22.25L, Stream KL14, and Stream 42 (Figure 2). Streams in the study area have been somewhat altered to accommodate development in a highly urbanized area. Buffers are limited by their proximity to elements of the built environment and typically consist of immature trees, shrubs, or grasses intermixed with nonnative, invasive plant species. Streams in the study area are all part of the Lake Washington hydrologic system and are typically characterized as low-gradient systems that originate in gently sloping upper basins and flow through narrow valleys. Stream flows are mostly fed by local rainfall, stormwater runoff, and groundwater.

As described in Chapter 3, stream types in the study area were classified based on City of Bothell and City of Kirkland municipal codes, and fish use potential was determined by WDFW. WDFW's determination of fish use potential is based on physical criteria but does not indicate fish presence (WDFW 2019b). In some cases, local jurisdictions' stream typing may vary from WDFW fish use potential classifications due to the use of different methods. Table 6 provides the local stream type and WDFW's determination of fish use potential for all four streams verified in the study area. The stream types listed in Table 6 indicate stream typing for reaches within the study area; reaches outside of the study area may have different stream types. Tables 7 through 10 describe the location of the stream within the watershed and study area, stream flow path, local stream type, buffer width, riparian area characterization with dominant plant species, and documented fish use according to SalmonScape (WDFW 2019c).

Table 6. Local Stream Type and Fish Use Potential Summary

Streams	Local Stream Type[a]	WDFW Fish Use Potential[b]
Juanita Creek	Type F	Yes
Stream 22.25L	Type Ns	No
Stream KL14	Type Np	No
Stream 42	Type Np	No

[a] Local Stream Type: Type F = segments of natural water that in any case contain fish habitat, Type Np = all segments of natural waters that are perennial, non-fish habitat streams, Type Ns = all segments of natural waters that are seasonal, non-fish habitat streams in which surface flow is not present for at least some portion of a year of normal rainfall

[b] Fish Use Potential as determined by Washington Department of Fish and Wildlife (WDFW) does not indicate fish presence; it is documented based on habitat criteria (WDFW 2019b).

Table 7. Stream Information Summary—Juanita Creek

STREAM INFORMATION SUMMARY		
	**Stream Name**	Juanita Creek
	WRIA	8
	WA Stream Catalog No.	08-0230
	Local Jurisdiction	City of Kirkland
	Local Stream Rating	Type F
	Buffer Width	100 feet
	Documented Anadromous Fish Use	Coho, sockeye, fall Chinook, winter steelhead (SalmonScape)
Location of Stream Relative to Project Corridor	Juanita Creek crosses I-405 from east to west at milepost (MP) 21.94 through a 48-inch culvert.	
Connectivity (where stream flows from/to)	Juanita Creek originates in a neighborhood east of I-405 just south of East Norway Hill Park. It generally flows southwest through an open channel until it reaches I-405. The creek is conveyed in pipes until it outlets at 119th Avenue NE. Just downstream of 119th Ave NE, the creek outlets into a forested valley and flows in a well-defined channel that has moderate to good floodplain connectivity. The creek enters the culvert under I-405 and then outlets downstream of I-405 through a 48-inch concrete pipe. From there, the creek flows through a series of open channels and culverts until it reaches Lake Washington.	
Riparian/Buffer Condition	Upstream of the I-405 crossing, Juanita Creek flows through a mixed forest area that contains bigleaf maple (*Acer macrophyllum*), western red cedar (*Thuja plicata*), and Douglas-fir (*Pseudotsuga menzesii*), and flows into a 48-inch-wide culvert. Downstream of I-405, Juanita Creek flows through a residential neighborhood, and the riparian vegetation along the stream is dominated by red alder (*Alnus rubra*), Pacific willow (*Salix lucida lasiandra*), and Himalayan blackberry (*Rubus armeniacus*).	

Table 8. Stream Information Summary—Stream 22.25L

STREAM INFORMATION SUMMARY		
	**Stream Name**	Stream 22.25L
	WRIA	8
	WA Stream Catalog No.	N/A
	Local Jurisdiction	City of Bothell
	Local Stream Rating	Type Ns
	Buffer Width	50 feet
	Documented Anadromous Fish Use	Not shown in SalmonScape
Location of Stream Relative to Project Corridor	Stream 22.25L originates from an 18-inch high-density polyethylene pipe west of I-405 at MP 22.25. Stream 22.25L is likely a seasonal stream because no flow was observed on April 10 and November 13, 2019.	
Connectivity (where stream flows from/to)	Stream 22.25L originates west of I-405 at MP 22.25 and flows west through Wetland 22.24L for approximately 800 feet. Stream 22.25L then flows south in a ditch along Juanita Woodinville Way NE for over 2,000 feet before being piped southeast for approximately 600 feet into Juanita Creek.	
Riparian/Buffer Condition	West of I-405, Stream 22.25L has a defined channel for approximately 150 feet before the channel disappears into a large wetland complex. The riparian buffer in this area is a mixed forest area that contains red alder, bigleaf maple, western red cedar, and Douglas-fir with moderate canopy cover. Understory vegetation includes Himalayan blackberry, salmonberry (*Rubus spectabilis*), and swordfern (*Polystichum munitum*).	

Table 9. Stream Information Summary—Stream KL14

STREAM INFORMATION SUMMARY		
	**Stream Name**	Stream KL14
	WRIA	8
	WA Stream Catalog No.	08-6900
	Local Jurisdiction	City of Bothell
	Local Stream Rating	Type Np
	Buffer Width	75 feet
	Documented Anadromous Fish Use	Not shown in SalmonScape
Location of Stream Relative to Project Corridor	Stream KL14 originates from a 42-inch corrugated steel pipe that crosses I-405 from east to west at MP 22.74.	
Connectivity (where stream flows from/to)	Stream KL14 originates west of I-405 at MP 22.74. There is an area drain east of I-405 that collects water from the adjacent grass slopes and combines that water with stormwater collected from the small contributing basin upstream. That flow is conveyed under I-405 in a 42-inch corrugated steel pipe, and the outlet is the headwaters of Stream KL14. Stream KL14 flows south to north in a steep ravine on the west side of I-405 in a relatively undeveloped area. Stream KL14 continues to flow north for approximately 2,000 feet through a forested area, crosses East Riverside Drive via a 48-inch corrugated metal culvert, and then flows through another 24-inch culvert north of East Riverside Drive. The stream then discharges into the Sammamish River approximately 200 feet north of East Riverside Drive.	
Riparian/Buffer Condition	Riparian vegetation observed along the stream channel consists of Himalayan blackberry, reed canarygrass (*Phalaris arundinacea*), red-osier dogwood (*Cornus sericea*), and Pacific willow. Overstory canopy cover is variable in different reaches, but is approximately 15 percent within the wetland portion, increasing to 80 to 90 percent downstream.	

Table 10. Stream Information Summary—Stream 42

STREAM INFORMATION SUMMARY		
	**Stream Name**	Stream 42
	WRIA	8
	WA Stream Catalog No.	N/A
	Local Jurisdiction	City of Bothell
	Local Stream Rating	Type Np
	Buffer Width	75 feet
	Documented Anadromous Fish Use	Not shown in SalmonScape
Location of Stream Relative to Project Corridor	Stream 42 crosses I-405 from east to west at MP 23.20 through a 30-inch culvert.	
Connectivity (where stream flows from/to)	Stream 42 originates in a residential neighborhood area southeast of the I-405/SR 522 interchange at MP 23.2, near Brickyard Road. The open channel starts approximately 920 feet upstream of the crossing under I-405. The stream flows generally northwest at a fairly steep gradient through a deep ravine containing steep valley walls. The stream crosses I-405 through a 30-inch corrugated metal pipe and is transported northwest under I-405. Downstream of the crossing, the pipe outlet is located at the bottom of the I-405 roadway prism slope. Just downstream of the outlet, there are two standpipes on either side of the channel, with each having an outlet to the channel downstream of their location. The stream continues for approximately 220 feet where it is collected and conveyed to the Sammamish River through a closed-pipe conveyance system of unknown diameter.	
Riparian/Buffer Condition	Upstream of the I-405 crossing, Stream 42 flows through a steep ravine that is dominated by western red cedar and bigleaf maple, with approximately 80 percent canopy cover. Along the bank, salmonberry, vine maple (*Acer circinatum*), and swordferns are present. Downstream of the I-405 crossing, the stream flows through a forested area dominated by red alder, with approximately 70 percent canopy cover.	

4.4 Jurisdictional Ditches

No jurisdictional ditches were identified within the study area.

Chapter 5. References

Anderson, P.S., S. Meyer, P. Olson, and E. Stockdale. 2016. *Determining the Ordinary High Water Mark for Shoreline Management Act Compliance in Washington State*. Publication No. 16-06-029. Washington Department of Ecology, Olympia, Washington.

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WSDOT. 2019. *Highway Runoff Manual*. Retrieved in March 2020 at https://www.wsdot.wa.gov/publications/manuals/fulltext/M31-16/highwayrunoff.pdf.

WSDOT. 2020. *SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project Wetland and Stream Assessment Report.*

Appendix A Methods and Tools

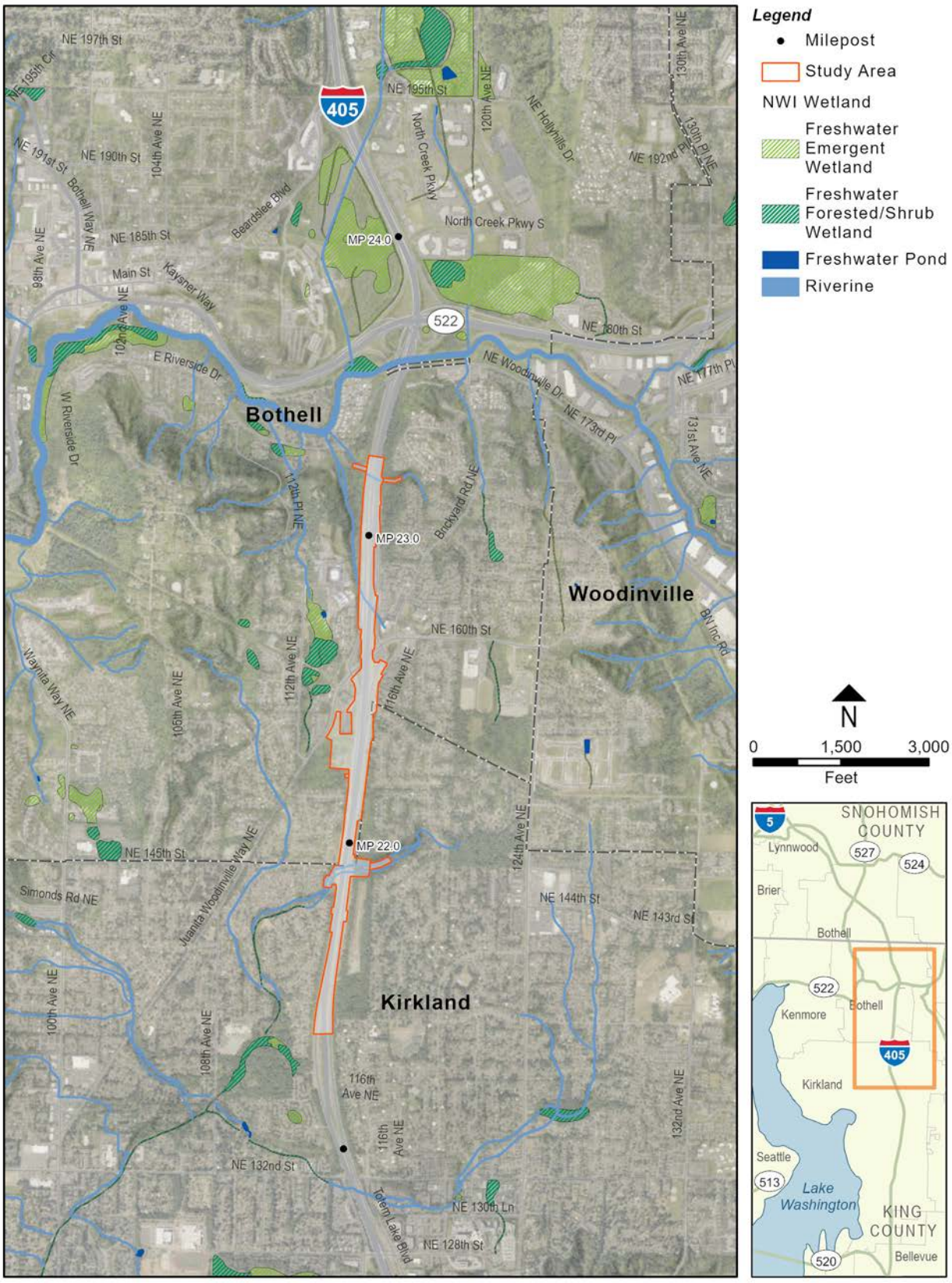
Parameter	Method or Tool	Website	Reference
Wetland Delineation	Washington State Wetland Delineation Manual	http://www.ecy.wa.gov/biblio/9694.html	**Ecology**. 1997. Washington State Wetland Identification and Delineation Manual. Publication #96-94. Washington State Department of Ecology, Olympia, WA.
	WSDOT Delineation Guidance Documents	http://www.wsdot.wa.gov/Environment/Biology/Wetlands/Delineation.htm#DelinGuidDocs	Website
	Western Mountains, Valleys, and Coast Region Regional Supplement	https://usace.contentdm.oclc.org/utils/getfile/collection/p266001coll1/id/7646	**U.S. 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. J.S. Wakeley, R.W. Lichvar, and C.V. Noble. ERDC/EL TR-10-3. Vicksburg, MS: U.S. Army Engineer Research and Development Center.
Wetland Classification	USFWS / Cowardin Classification System	http://www.fws.gov/nwi/Pubs_Reports/Class_Manual/class_titlepg.htm	**Cowardin**, L.M., V. Carter, F.C. Golet, E.T. LaRoe. 1979. Classification of wetlands and deepwater habitats of the United States. Government Printing Office, Washington, D.C.
	Hydrogeomorphic Classification (HGM) System	http://el.erdc.usace.army.mil/wetlands/pdfs/wrpde4.pdf	**Brinson**, M.M. 1993. A hydrogeomorphic classification for wetlands. Technical Report WRP-DE-4. U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.
Wetland Rating	Washington State Wetland Rating System	Western Washington: https://fortress.wa.gov/ecy/publications/documents/1406029.pdf	**Hruby**, T. 2014. Washington State Wetland Rating System for Western Washington: 2014 Update. (Publication #14-06-029). Washington State Department of Ecology, Olympia, WA.
	City of Kirkland City of Bothell	http://www.mrsc.org/codes.aspx	Uses State Rating System Kirkland Zoning Code 90.55 Bothell Municipal Code 14.04.500
Stream Delineation	OHWM	http://www.usace.army.mil/inet/functions/cw/cecwo/reg/33cfr328.htm	Congressional Federal Register 33 Part 328 Definition of Waters of the United States.

Parameter	Method or Tool	Website	Reference
Stream Delineation, continued	OHWM	https://fortress.wa.gov/ecy/publications/documents/1606029.pdf	**Anderson**, P.S., S. Meyer, P. Olson, and E. Stockdale. 2016. Determining the Ordinary High Water Mark for Shoreline Management Act Compliance in Washington State. (Publication No. 16-06-029). Washington Department of Ecology, Olympia, WA.
Stream Classification	Washington Department of Fish and Wildlife	https://wdfw.wa.gov/publications/02061	**WDFW**. 2019. Fish Passage Inventory, Assessment, and Prioritization Manual. Olympia, Washington.
	City of Kirkland City of Bothell	http://www.mrsc.org/codes.aspx	Use State Typing System Kirkland Zoning Code 90.65 Bothell Municipal Code 14.04.005
Wetland Indicator Status	Northwest (Region 9) (Reed 1988) and Northwest (Region 9) Supplement (Reed et al. 1993)	http://www.fws.gov/nwi/bha/list88.html	**Reed**, P.B., Jr. 1988. National list of plant species that occur in wetlands: Washington. Biological Report NERC-88/18.47 for National Wetlands Inventory, Washington, D.C. **Reed**, P.B. Jr. 1993. Northwest supplement (Region 9) species with a change in indicator status or added to the Northwest 1988 list, wetland plants of the state of Washington 1988. U.S. Department of Interior Fish and Wildlife Service WELUT-88 (26.9), Washington, D.C.
Plant Names	USDA PLANTS Database	http://plants.usda.gov/	Website (see Appendix A)
Soils Data	Soil Survey	Web Soil Survey: http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx	Website
Hydric Soils Data	Washington Hydric Soils Lists by Country	http://www.wa.nrcs.usda.gov/technical/soils/county_hydric_lists.html	Website
Report Preparation	City of Kirkland City of Bothell	http://www.mrsc.org/codes.aspx	Kirkland Zoning Code 90 Bothell Municipal Code 13.13

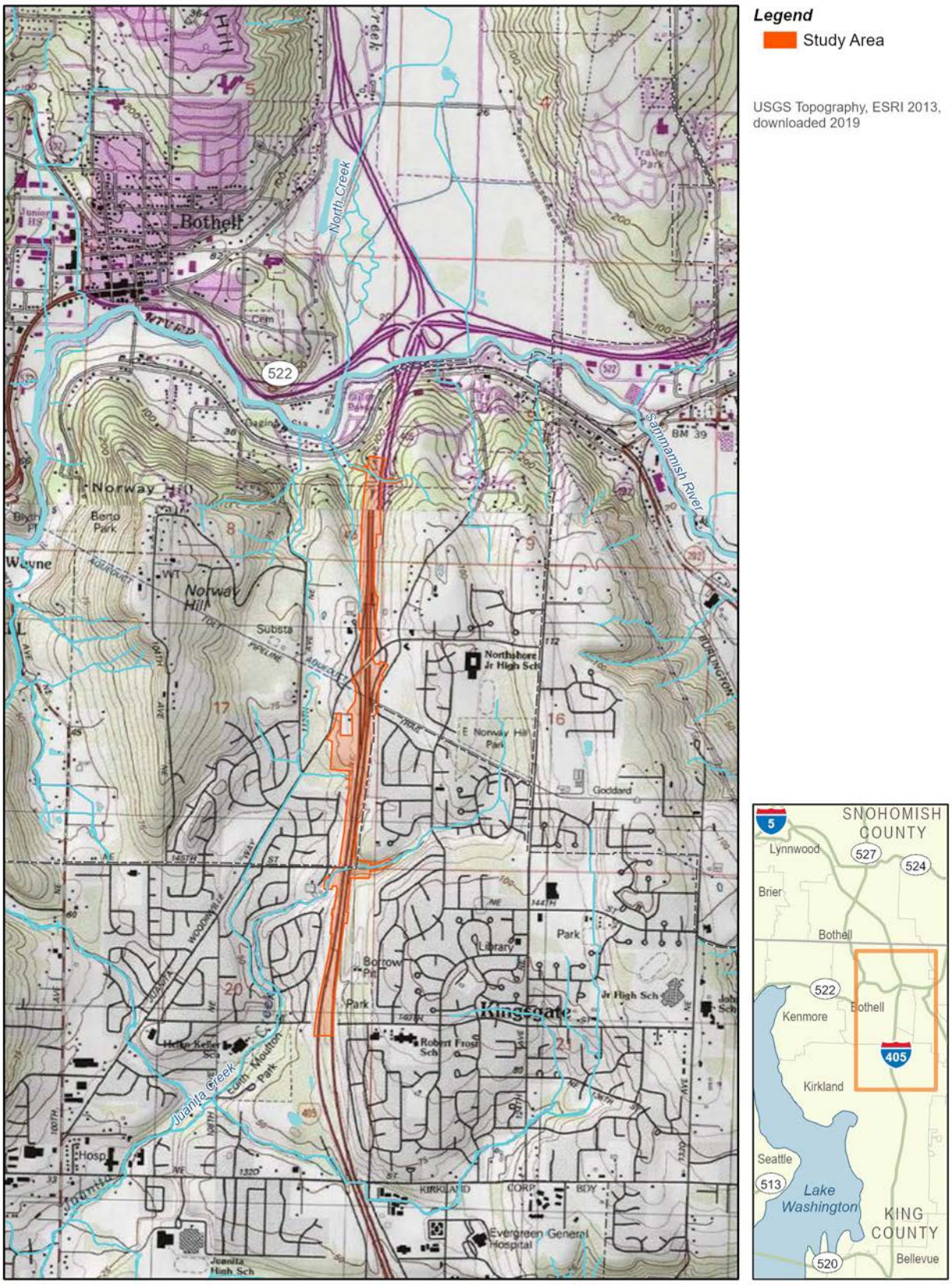
Appendix B Background Information

- Wetland Inventory Map
- U.S. Geological Survey Topographic Map
- Soil Survey Map
- Precipitation Data
- List of Existing Plants

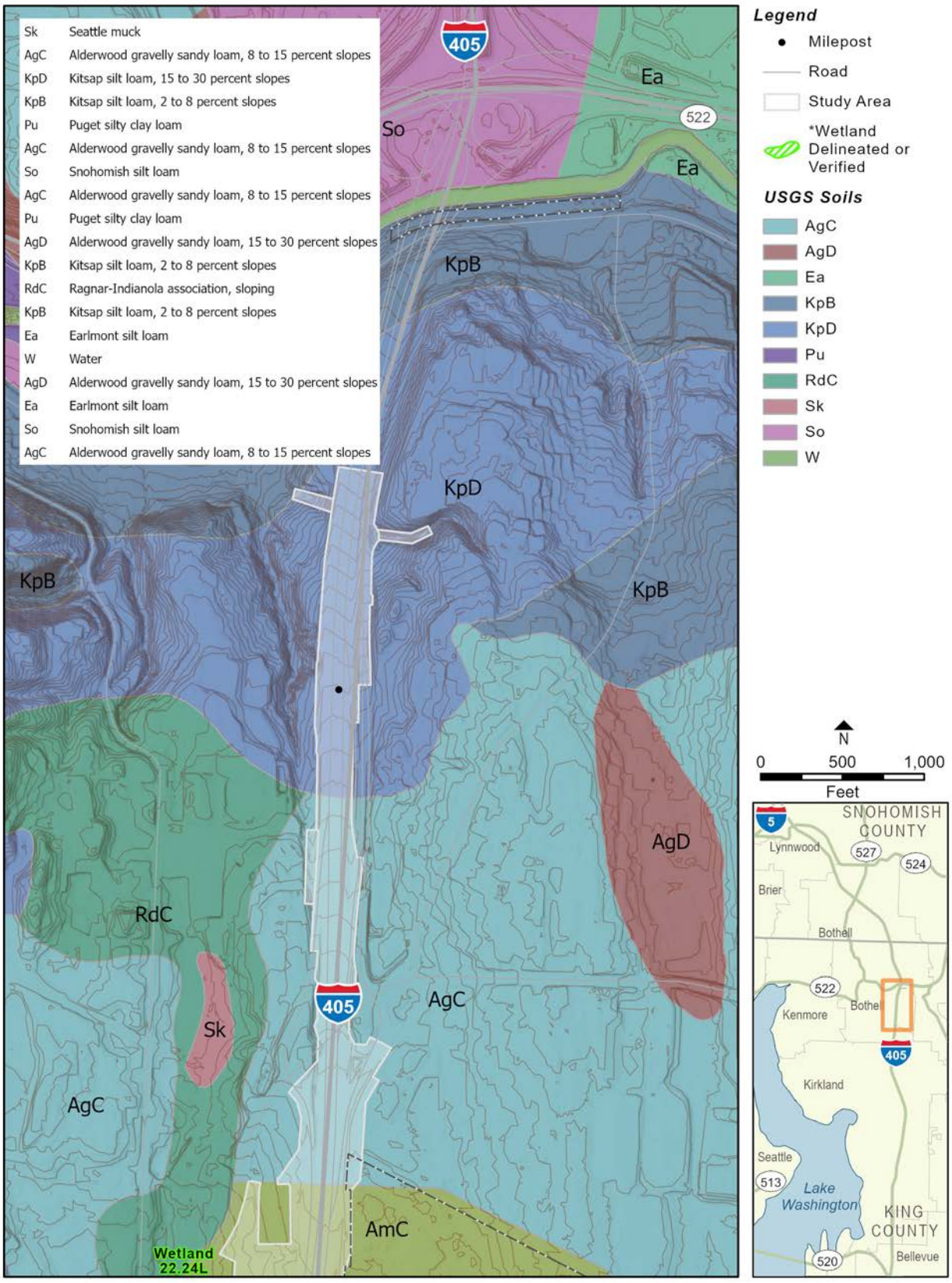
Wetland Inventory Map



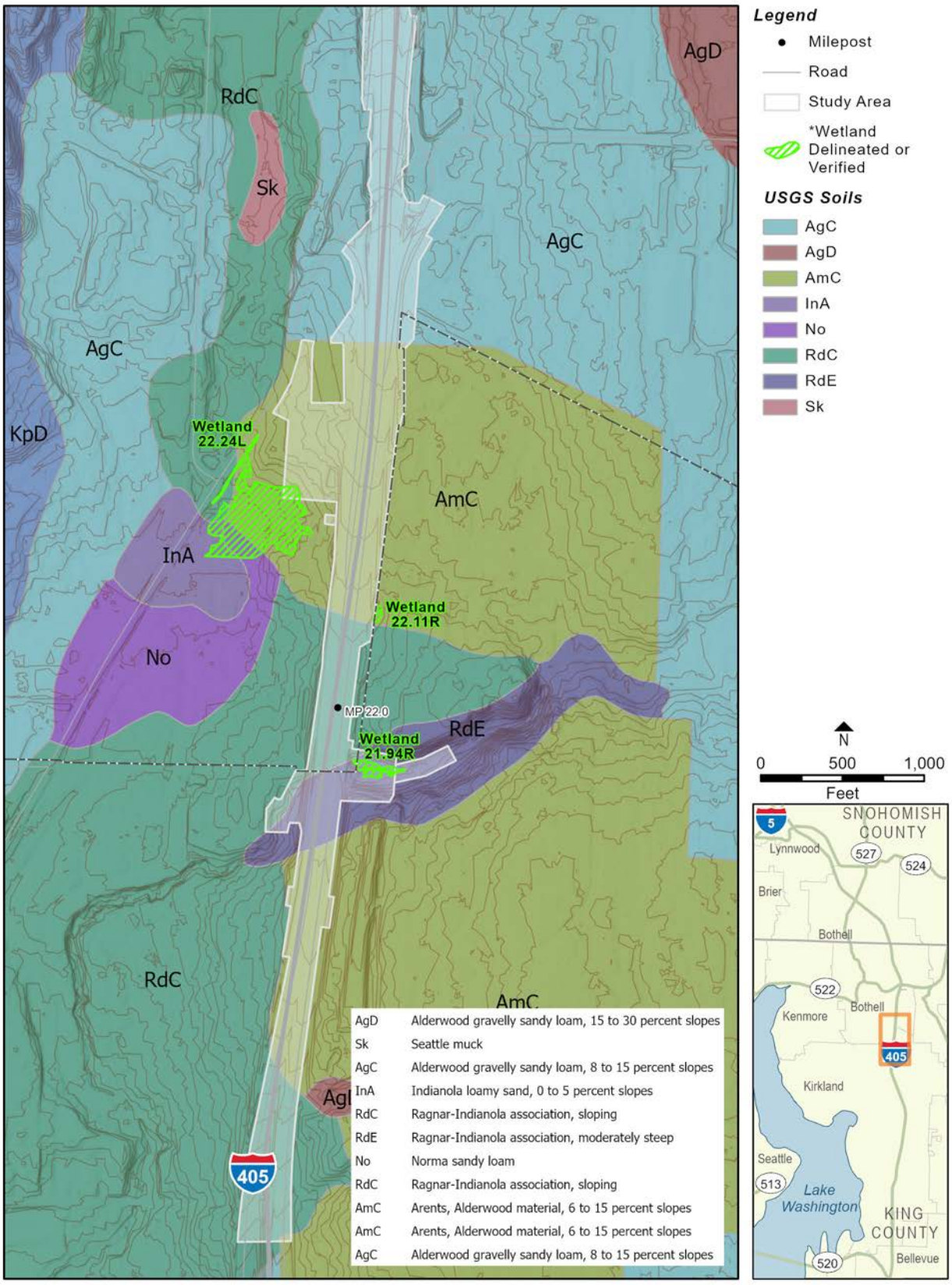
U.S. Geological Survey Topographic Map



Soil Survey Maps – Sheet 1 of 2



Soil Survey Maps – Sheet 2 of 2



Precipitation Data

Monthly precipitation data for Seattle-Tacoma International Airport, Washington

For March 2019 Field Visit

		Long-term rainfall records							
	Month	3 yrs. In 10 less than	Average	3 yrs. In 10 more than	Rainfall[a]	Condition dry, wet, normal[b]	Condition Value	Month weight value	Product of previous two columns
1st prior month	February	2.73	4.18	5.02	4.62	Normal	2	3	6
2nd prior month	January	3.58	5.13	6.10	3.83	Normal	2	2	4
3rd prior month	December	3.94	5.62	6.68	6.08	Normal	2	1	2
								Sum	**12**

[a] Natural Resources Conservation Service (NRCS). 2019. Agricultural Applied Climate Information System. US Department of Agriculture, Natural Resources Conservation Service. Retrieved in June 2019 at http://agacis.rcc-acis.org/?fips=53033.

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

Note: if sum is		Condition Value:	
6-9	then prior period has been drier than normal	Dry (D)	1
		Normal (N)	2
		Wet (W)	3
10-14	then period has been normal		
15-18	then period has been wetter than normal		

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

Monthly precipitation data for Seattle-Tacoma International Airport, Washington

For November 2019 Field Visit

		Long-term rainfall records							
	Month	3 yrs. In 10 less than	Average	3 yrs. In 10 more than	Rainfall[a]	Condition dry, wet, normal[b]	Condition Value	Month weight value	Product of previous two columns
1st prior month	October	1.96	3.19	3.86	3.67	Normal	2	3	6
2nd prior month	September	0.69	1.63	1.90	3.32	Wet	3	2	6
3rd prior month	August	0.38	1.02	1.24	1.2	Normal	2	1	2
								Sum	**14**

[a] Natural Resources Conservation Service (NRCS). 2019. Agricultural Applied Climate Information System. US Department of Agriculture, Natural Resources Conservation Service. Retrieved in June 2019 at http://agacis.rcc-acis.org/?fips=53033.

[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: **Normal** precipitation conditions were present prior to the field visits on November 13th and 15th, 2019.

Existing Plant Species in or near Study Area

Genus	Species	Common Name	WIS*
Acer	*macrophyllum*	Bigleaf maple	FAC
Agrostis	*stolonifera*	Creeping bentgrass	FAC
Alnus	*rubra*	Red alder	FAC
Athyrium	*cyclosorum*	Ladyfern	FAC
Cardamine	*oligosperma*	Little western bittercress	FAC
Carex	*obnupta*	Slough sedge	OBL
Cirsium	*arvense*	Canada thistle	FAC
Cornus	*alba*	Redosier dogwood	FACW
Crepis	*capillaris*	Smooth hawksbeard	FACU
Cytisus	*scoparius*	Scotch broom	UPL
Dactylis	*glomerata*	Orchardgrass	FACU
Gaultheria	*shallon*	Salal	FACU
Geranium	*robertianum*	Robert geranium	FACU
Ilex	*aquifolium*	English holly	FACU
Juncus	*effusus*	Common rush	FACW
Lonicera	*involucrata*	Twinberry honeysuckle	FAC
Phalaris	*arundinacea*	Reed canarygrass	FACW
Pinus	*contorta*	Lodgepole pine	FAC
Plantago	*lanceolata*	Narrowleaf plantain	FACU
Poa	*pratensis*	Kentucky bluegrass	FAC
Polystichum	*munitum*	Western sword fern	FACU
Populus	*balsamifera*	Black cottonwood	FAC
Pseudotsuga	*menziesii*	Douglas-fir	FACU
Ranunculus	*repens*	Creeping buttercup	FAC
Rubus	*armeniacus*	Himalayan blackberry	FAC
Rubus	*laciniatus*	Cutleaf blackberry	FACU
Rubus	*spectabilis*	Salmonberry	FAC
Rubus	*ursinus*	Trailing blackberry	FACU
Rumex	*acetosella*	Common sheep sorrel	FACU
Salix	*sitchensis*	Sitka willow	FACW
Sambucus	*racemosa*	Red elderberry	FACU
Solanum	*dulcamara*	Climbing nightshade	FAC
Taraxacum	*officinale*	Common dandelion	FACU

Genus	Species	Common Name	WIS*
Thuja	*plicata*	Western redcedar	FAC
Tolmiea	*menziesii*	Youth on age	FAC
Urtica	*dioica*	Stinging nettle	FAC
Vicia	*americana*	American vetch	FAC

* Wetland Indicator Status (WIS):

OBL = occurs in wetlands > 99% of time

FACW = occurs in wetlands 67-99% of time

FAC = occurs in wetlands 34-66% of time

FACU = occurs in wetlands 1-33% of time

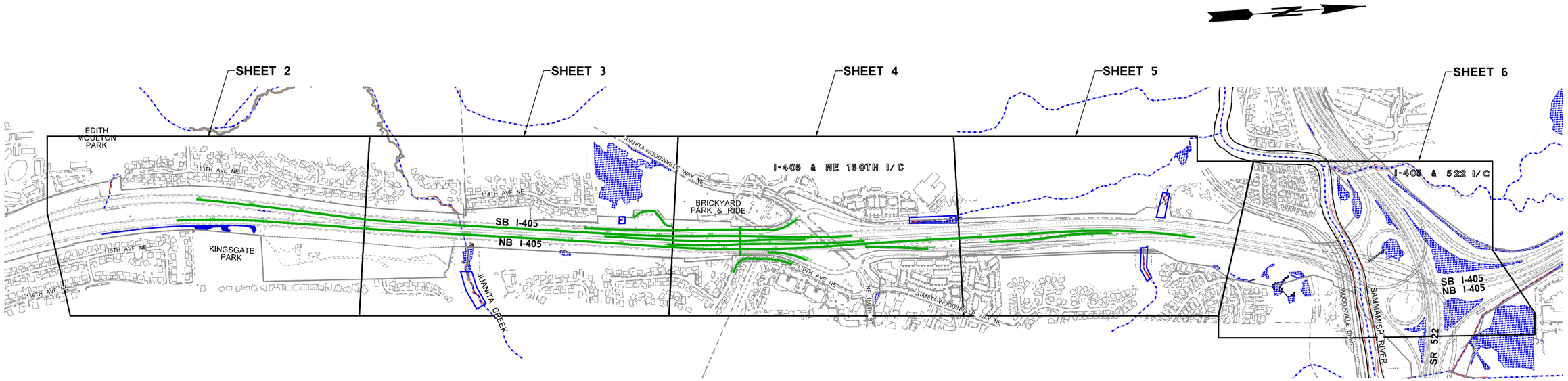
UPL = occurs in uplands > 99% of time

NI = indicator status not known in this region

~ = unsure as to FAC or FACU

Appendix C Existing Conditions Plan Sheets

T.26N.R.5E.W.M.



ENVIRONMENTAL LEGEND

- WETLAND
- WETLAND BOUNDARY
- WETLAND BUFFER
- STREAM CENTER LINE
- ORDINARY HIGH WATER MARK BOUNDARY
- STREAM BUFFER
- WETLAND STUDY AREA
- STREAM STUDY AREA
- EXISTING CULVERT
- EXISTING STORM SEWER
- EXISTING EDGE OF PAVEMENT
- SAMPLE PLOT POINTS
- WETLAND OUTSIDE OF THE STUDY AREA

0 500 1000
SCALE IN FEET

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DESIGNED BY	S. REIBEL						
ENTERED BY	S. TAYLOR						
CHECKED BY	M. DALZELL				CONTRACT NO.		LOCATION NO. XL6138
PROJ. ENGR.	C. BARNETT						
REGIONAL ADM.	K. HENRY	REVISION	DATE	BY			

Washington State Department of Transportation

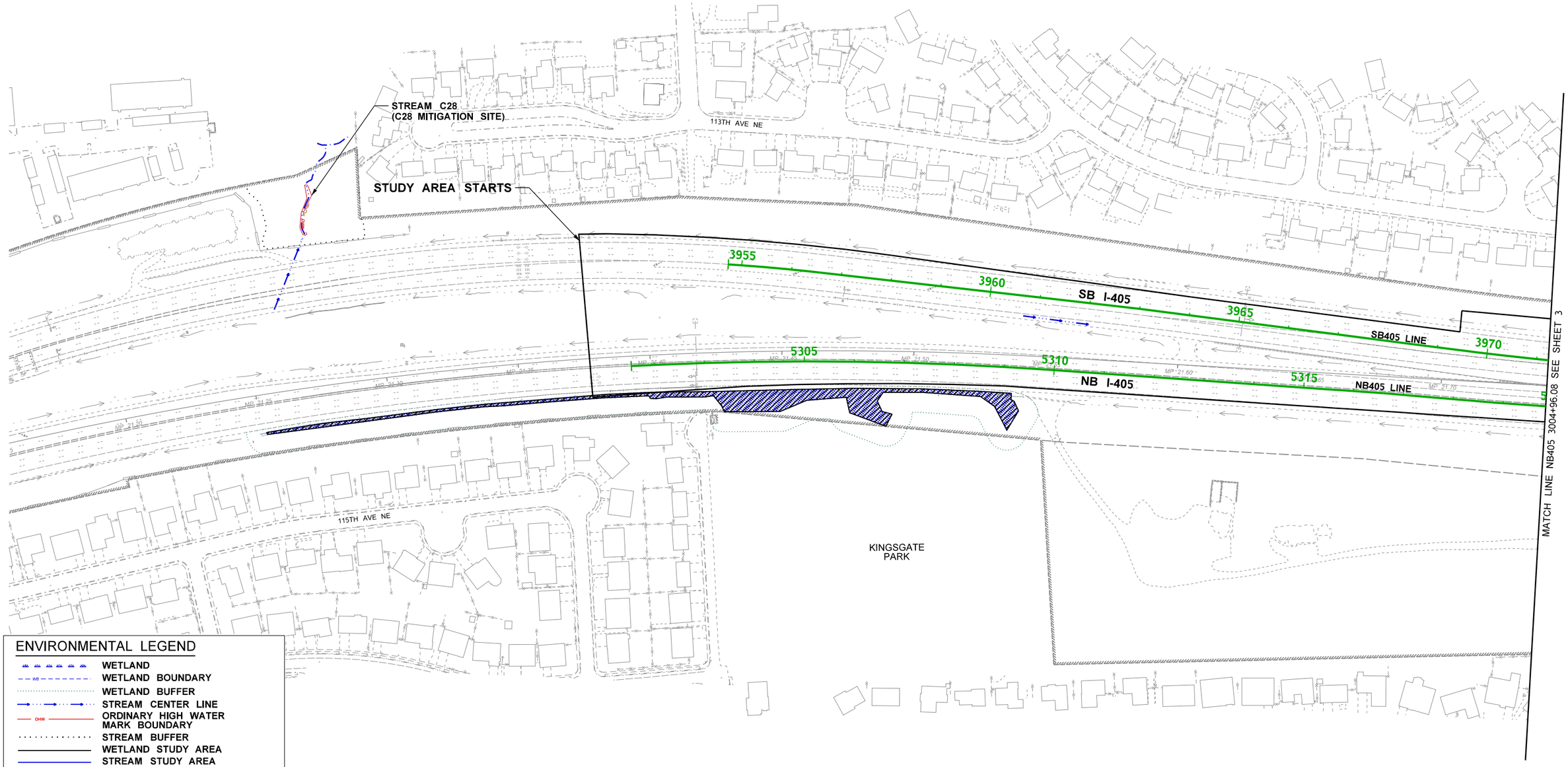
I-405
BRICKYARD PARK AND RIDE INLINE FREEWAY STATION BRT PROJECT

EXISTING CONDITIONS

PLAN REF NO

SHEET 1 OF 6 SHEETS

T.26N.R.5E.W.M.



ENVIRONMENTAL LEGEND

- WETLAND
- WETLAND BOUNDARY
- WETLAND BUFFER
- STREAM CENTER LINE
- ORDINARY HIGH WATER MARK BOUNDARY
- STREAM BUFFER
- WETLAND STUDY AREA
- STREAM STUDY AREA
- EXISTING CULVERT
- EXISTING STORM SEWER
- EXISTING EDGE OF PAVEMENT
- SAMPLE PLOT POINTS
- WETLAND OUTSIDE OF THE STUDY AREA

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DESIGNED BY	S. REIBEL
ENTERED BY	S. TAYLOR
CHECKED BY	M. DALZELL
PROJ. ENGR.	C. BARNETT
REGIONAL ADM.	K. HENRY

REVISION	DATE	BY

REGION NO.	STATE
10	WASH

JOB NUMBER

CONTRACT NO.

FED.AID PROJ.NO.

LOCATION NO. XL6138

Washington State Department of Transportation

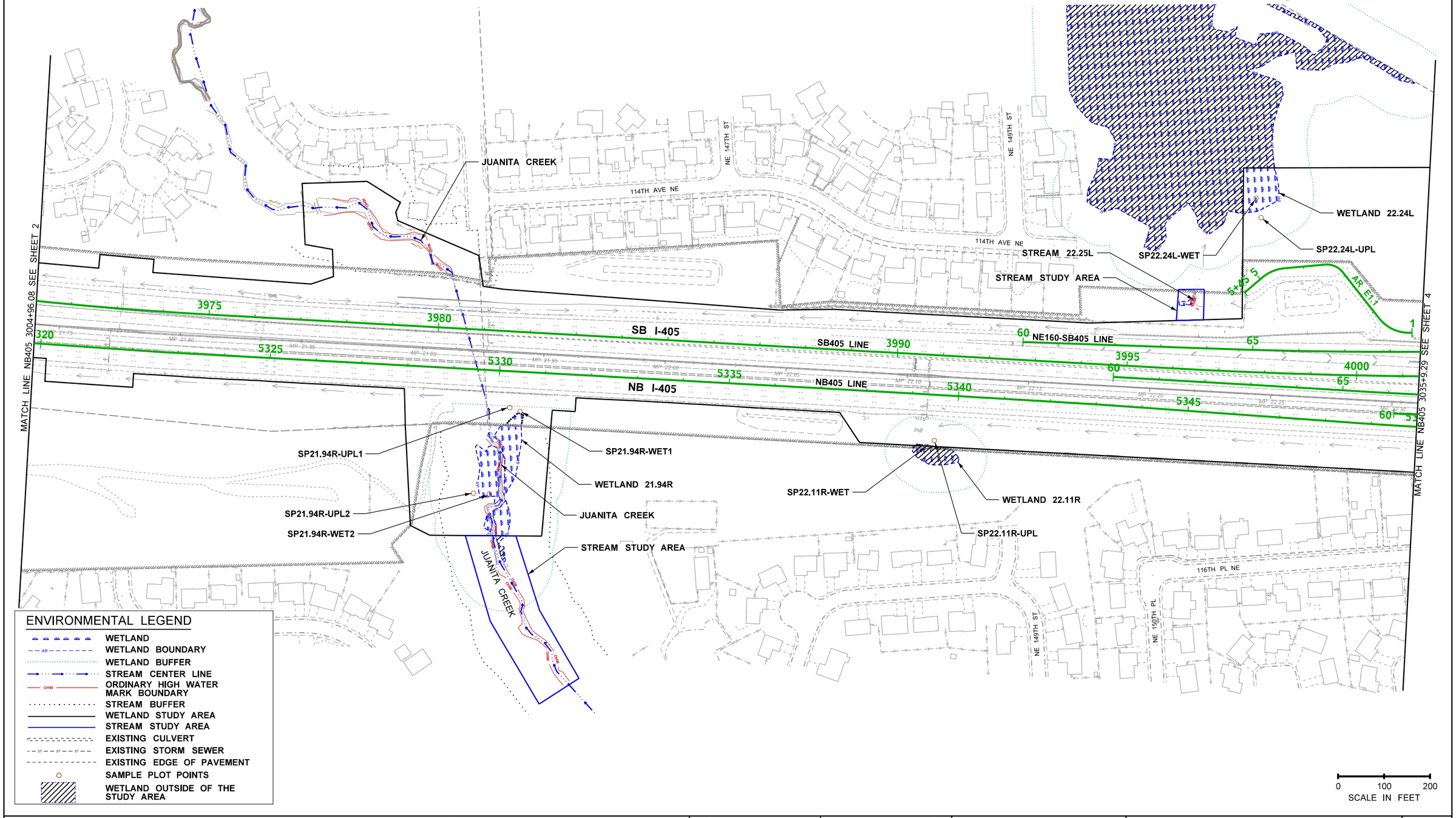
I-405
BRICKYARD PARK AND RIDE INLINE FREEWAY STATION BRT PROJECT

EXISTING CONDITIONS

PLAN REF NO

SHEET 2 OF 6 SHEETS

T.26N.R.5E.W.M.



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DESIGNED BY	S. REIBEL						
ENTERED BY	S. TAYLOR				CONTRACT NO.		LOCATION NO.
CHECKED BY	M. DALZELL						XL6138
PROJ. ENGR.	C. BARNETT						
REGIONAL ADM.	K. HENRY	REVISION	DATE	BY			

Washington State Department of Transportation

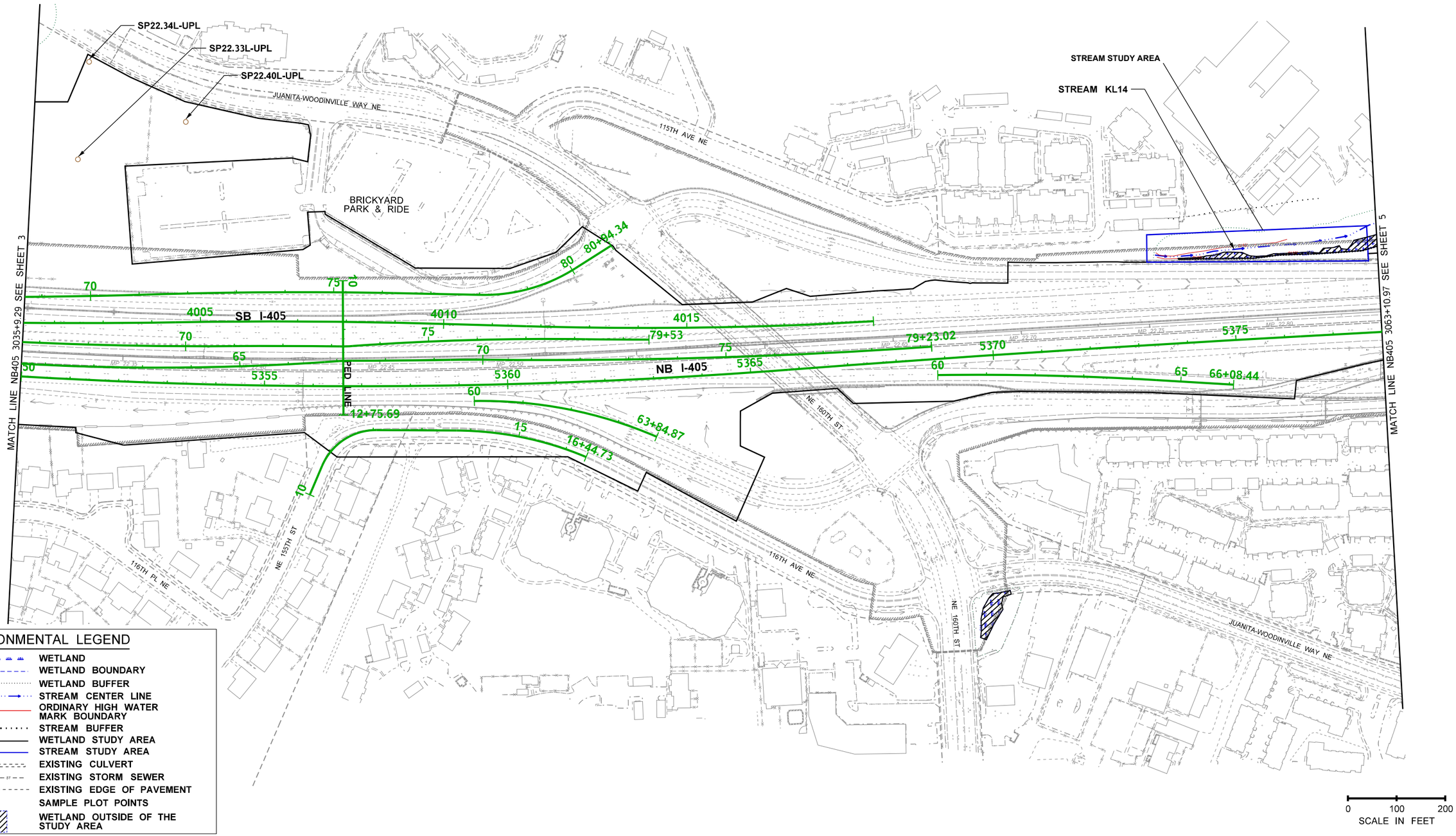
I-405
BRICKYARD PARK AND RIDE INLINE FREEWAY STATION BRT PROJECT

EXISTING CONDITIONS

PLAN REF NO

SHEET 3 OF 6 SHEETS

T.26N.R.5E.W.M.



ENVIRONMENTAL LEGEND

- WETLAND
- WETLAND BOUNDARY
- WETLAND BUFFER
- STREAM CENTER LINE
- ORDINARY HIGH WATER MARK BOUNDARY
- STREAM BUFFER
- WETLAND STUDY AREA
- STREAM STUDY AREA
- EXISTING CULVERT
- EXISTING STORM SEWER
- EXISTING EDGE OF PAVEMENT
- SAMPLE PLOT POINTS
- WETLAND OUTSIDE OF THE STUDY AREA

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DATE	2/11/2021							
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DESIGNED BY	S. REIBEL							
ENTERED BY	S. TAYLOR							
CHECKED BY	M. DALZELL				CONTRACT NO.		LOCATION NO. XL6138	
PROJ. ENGR.	C. BARNETT							
REGIONAL ADM.	K. HENRY	REVISION	DATE	BY				

Washington State Department of Transportation

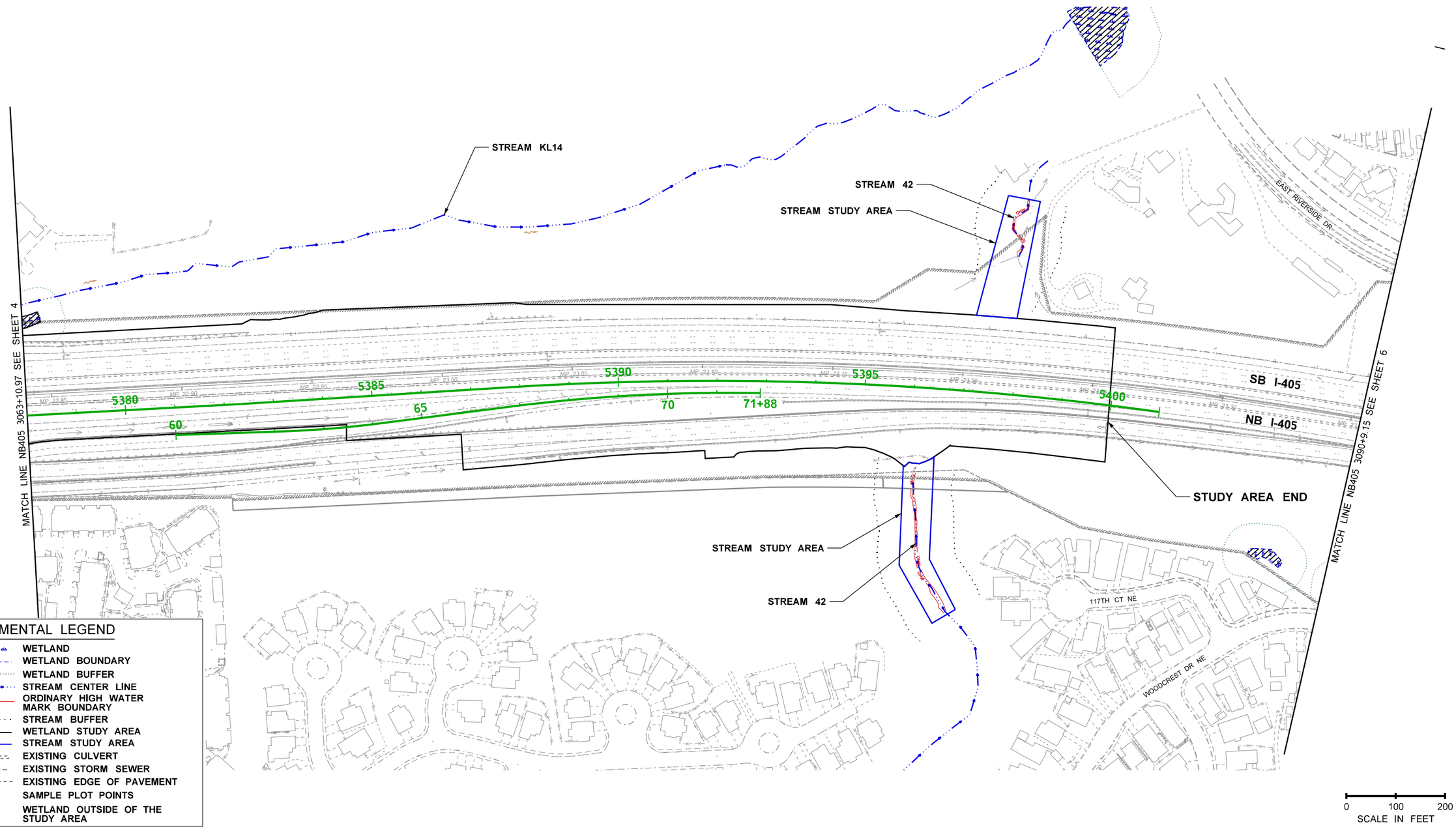
I-405
BRICKYARD PARK AND RIDE INLINE FREEWAY STATION BRT PROJECT

EXISTING CONDITIONS

PLAN REF NO

SHEET 4 OF 6 SHEETS

T.26N.R.5E.W.M.



ENVIRONMENTAL LEGEND

- WETLAND
- WETLAND BOUNDARY
- WETLAND BUFFER
- STREAM CENTER LINE
- ORDINARY HIGH WATER MARK BOUNDARY
- STREAM BUFFER
- WETLAND STUDY AREA
- STREAM STUDY AREA
- EXISTING CULVERT
- EXISTING STORM SEWER
- EXISTING EDGE OF PAVEMENT
- SAMPLE PLOT POINTS
- WETLAND OUTSIDE OF THE STUDY AREA

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DESIGNED BY	S. REIBEL				CONTRACT NO.		LOCATION NO.
ENTERED BY	S. TAYLOR						XL6138
CHECKED BY	M. DALZELL						
PROJ. ENGR.	C. BARNETT						
REGIONAL ADM.	K. HENRY	REVISION	DATE	BY			

Washington State Department of Transportation

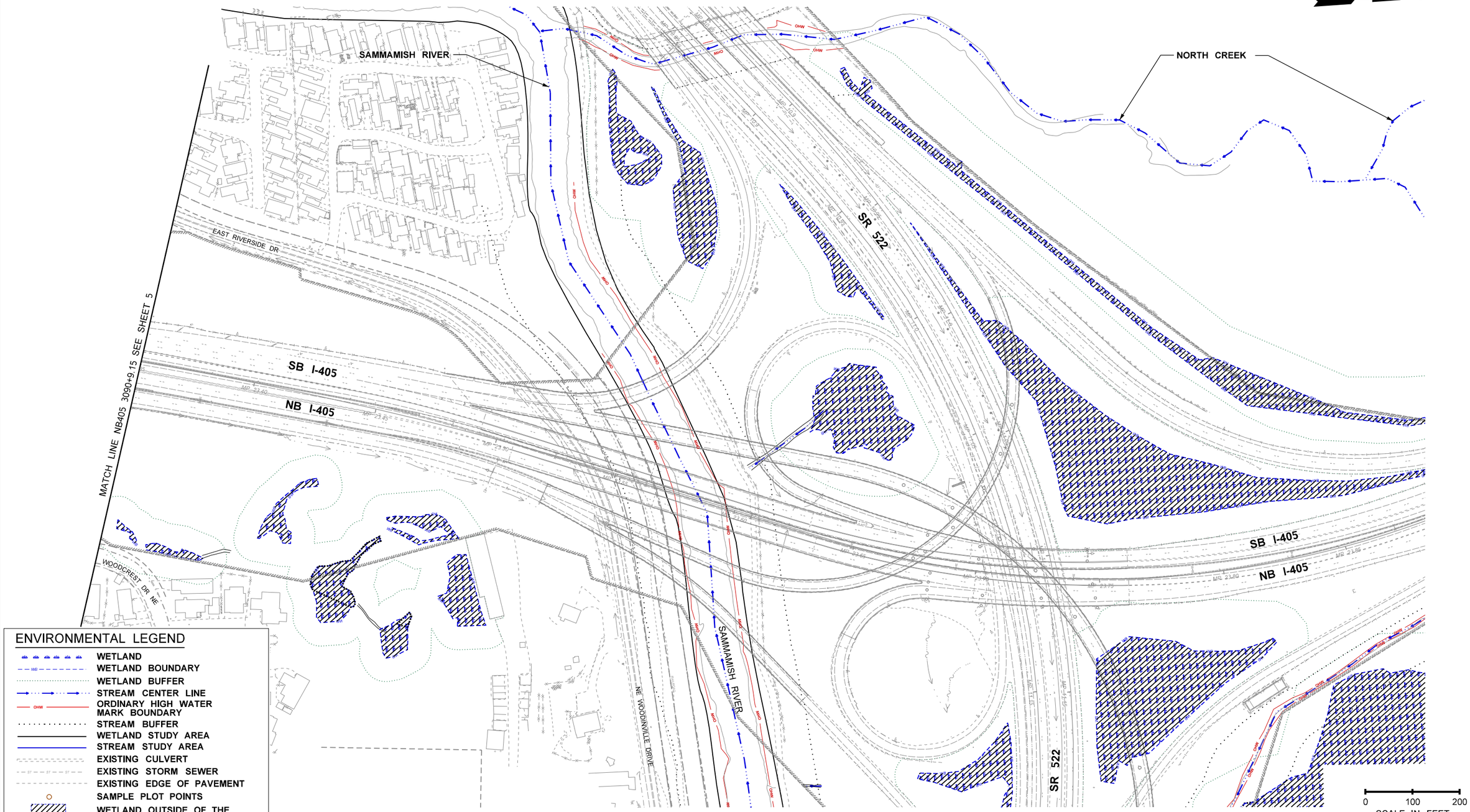
I-405
BRICKYARD PARK AND RIDE INLINE FREEWAY STATION BRT PROJECT

EXISTING CONDITIONS

PLAN REF NO

SHEET 5 OF 6 SHEETS

T.26N.R.5E.W.M.



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DESIGNED BY	S. REIBEL				CONTRACT NO.		LOCATION NO.
ENTERED BY	S. TAYLOR						XL6138
CHECKED BY	M. DALZELL						
PROJ. ENGR.	C. BARNETT						
REGIONAL ADM.	K. HENRY	REVISION	DATE	BY			

Washington State Department of Transportation

I-405
BRICKYARD PARK AND RIDE INLINE FREEWAY STATION BRT PROJECT

EXISTING CONDITIONS

PLAN REF NO

SHEET 6 OF 6 SHEETS

Appendix D Wetland Delineation Data Sheets

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

Project/Site: I-405, SR522 to SR527 Capacity Improvement City/County: King Sampling Date: 3/14/2019

Applicant/Owner: WSDOT State: WA Sampling Point: SP 21.94R-WET1

Investigators: Dalzell, Reibel Section, Township, Range: Sec 17/T26N/R05E

Landform (hillslope, terrace, etc.): Depression Local Relief (concave, convex, none): Concave Slope(%): 3

Subregion (LRR): A Lat: 47.733555 Long: -122.188187 Datum: WGS84

Soil Map Unit Name: Ragnar-Indianola association, moderately steep NWI Classification: PSS1

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

Are Vegetation: ____ Soil ____ or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

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

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

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

Remarks:

Sample plot is located in Wetland 21.84R; all 3 criteria are present.

VEGETATION – Use scientific names of plants.

		Absolute	Dominant	Indicator
Tree Statum	(Plot size:)	% Cover	Species?	Status
1.				
2.				
3.				
4.				
			= Total Cover	
Sapling/Shrub Stratum	(Plot size:)			
1.	Alnus rubra	40	Yes	FAC
2.	Cornus alba	20	Yes	FACW
3.	Rubus armeniacus	10	No	FAC
4.	Rubus spectabilis	10	No	FAC
5.				
		80	= Total Cover	
Herb Stratum	(Plot size:)			
1.	Carex obnupta	40	Yes	OBL
2.	Athyrium cyclosorum	20	Yes	FAC
3.	Juncus effusus	20	Yes	FACW
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
		80	= Total Cover	
Woody Vine Stratum	(Plot size:)			
1.				
2.				
			= Total Cover	

% Bare Ground in Herb Stratum 20 % Cover of Biotic Crust ____

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	40	x1=	40
FACW species	40	x2=	80
FAC species	80	x3=	240
FACU species		x4=	0
UPL species		x5=	0
Column Totals:	160 (A)		360 (B)

Prevalence Index = B/A= 2.25

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

Sample plot meets dominance test and prevalence index for hydrophytic vegetation.

SOIL

Sampling Point: SP 21.94R-WET1

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR3/2	100					Sandy Loam	
8-20	10YR3/1	100					Sandy Loam	

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- X Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (except MLRLA 1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes X No ___

Remarks:

Sulfuric odor at 8 inches. Sample plot meets hydric soil indicator for A4.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- X High Water Tables (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aeriel Imagery (B
- ___ Sparsley Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MRLA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Stained Leaves (B9) (**MRLA 1, 2, 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aeriel Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes X No ___ Depth (inches): 8.0

Saturation Present? Yes X No ___ Depth (inches): 0.0

(includes capillary fringe)

Wetland Hydrology Present? **Yes X No** ___

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

Remarks:

Surface inundation 3 feet away from the sample plot. Sample plot meets wetland hydrology indicator for A2 and A3.

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

Project/Site: I-405, SR522 to SR527 Capacity Improvement City/County: King Sampling Date: 3/14/2019

Applicant/Owner: WSDOT State: Washington Sampling Point: SP 21.94R-UP1

Investigators: Dalzell, Reibel Section, Township, Range: Sec 17/T26N/R05E

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

Subregion (LRR): A Lat: 47.733521 Long: -122.188446 Datum: WGS84

Soil Map Unit Name: Ragnar-Indianola association, moderately steep NWI Classification: UPL

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

Are Vegetation: ____ Soil ____ or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

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

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

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

Remarks:

Sample plot is not located in a wetland; 2 out of 3 criteria are absent.

VEGETATION – Use scientific names of plants.

	Absolute	Dominant	Indicator
Tree Statum (Plot size:)	% Cover	Species?	Status
1. Populus balsamifera	10	Yes	FAC
2.			
3.			
4.			
	10	= Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1. Rubus armeniacus	30	Yes	FAC
2. Alnus rubra	10	Yes	FAC
3. Cytisus scoparius	5	No	UPL
4.			
5.			
	45	= Total Cover	
Herb Stratum (Plot size:)			
1. Poa pratensis	30	Yes	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	30	= Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
		= Total Cover	

% Bare Ground in Herb Stratum 70 % Cover of Biotic Crust ____

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x1=	
FACW species		x2=	0
FAC species	80	x3=	240
FACU species		x4=	0
UPL species	5	x5=	25
Column Totals:	85 (A)		265 (B)

Prevalence Index = B/A= 3.12

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

About 40% of moss present.
Sample plot meets dominance test for hydrophytic vegetation.

SOIL

Sampling Point: SP 21.94R-UP1

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	2.5Y4/4	100					Loamy Sand	

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (except MLRLA 1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: Quarry spalls

Depth (inches): 16

Hydric Soil Present? Yes ___ No X

Remarks:

Below 16 inches quarry spalls present. No hydric soils are present in the sample plot.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Tables (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aeriel Imagery (B
- ___ Sparsley Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MRLA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Stained Leaves (B9) (**MRLA 1, 2, 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aeriel Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? **Yes** ___ **No** X

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

Remarks:

No wetland hydrology indicators are present in the sample plot.

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

Project/Site: Brickyard | City/County: Kirkland/King | Sampling Date: 11/15/2019
Applicant/Owner: WSDOT | State: WA | Sampling Point: 21.94R-WET2
Investigator(s): M. Dalzell, S. Reibel | Section, Township, Range: 20/T26N/R05E
Landform (hillslope, terrace, etc.): floodplain | Local relief (concave, convex, none): concave | Slope: 0
Subregion (LRR): Northwest Forests and Coast (LRR A) | Lat: 47.73304433 | Long: -122.18694614 | Datum: WGS84
Soil Map Unit Name: Ragnar-Indianola association, moderately steep | NWI Classification: Riverine
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" Present? Yes X 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 **X**	No ____	**Is the Sampled Area within a Wetland?** **Yes X** **No ____**
Hydric Soil Present?	Yes **X**	No ____	
Wetland Hydrology Present?	Yes **X**	No ____	

Plot located in Wetland 22.94L, approximately 15 feet south of Juanita Creek.

VEGETATION

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status?
1. *Alnus rubra*	40	Yes	FAC
2.			
3.			
4.			
5.			
50%= 20 20%= 8 Total Cover: **40**			
Sapling/Shrub Stratum (Plot size: ____)			
1. *Rubus spectabilis*	40	Yes	FAC
2. *Rubus armeniacus*	40	Yes	FAC
3. *Lonicera involucrata*	20	Yes	FAC
4.			
5.			
50%= 50 20%= 20 Total Cover: **100**			
Herb Stratum (Plot size: ____)			
1. *Solanum dulcamara*	20	Yes	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
50%= 10 20%= 4 Total Cover: **20**			
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
Total Cover: **0**			
% Bare Ground in Herb Stratum **80** % Cover of Biotic Crust ____			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: **5** (A)

Total Number of Dominant Species Across All Strata: **5** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **100%** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	**0**	x1 =	**0**
FACW species	**0**	x2 =	**0**
FAC species	**160**	x3 =	**480**
FACU species	**0**	x4 =	**0**
UPL species	**0**	x5 =	**0**
Column Totals:	**160** (A)		**480** (B)

Prevalence Index = B/A = **3.0**

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? **Yes X** **No ____**

Remarks:

SOIL

Sampling Point: 21.94R-WET2

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	2.5Y3/2	90	10YR3/3	10	C	PL	Sandy Loam	
12-18	5Y4/1	90	10YR3/3	10	C	M	Loamy Sand	

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Muck Mineral (S1)
- ___ Sandy gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___		
Water table Present?	Yes X	No ___	Depth (inches): 15		
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 0	**Wetland Hydrology Present?**	**Yes** X **No** ___

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

Remarks:

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

Project/Site: Brickyard | City/County: Kirkland/King | Sampling Date: 11/15/2019

Applicant/Owner: WSDOT | State: WA | Sampling Point: SP21.94R-UP2

Investigator(s): M. Dalzell, S. Reibel | Section, Township, Range: 20/T26N/R05E

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

Subregion (LRR): Northwest Forests and Coast (LRR A) | Lat: 47.73295032 | Long: -122.18696015 | Datum: WGS84

Soil Map Unit Name: Ragnar-Indianola association, moderately steep | NWI Classification: UPL

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

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" Present? Yes X No ____

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

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

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

Plot located south of Wetland 22.94L.

VEGETATION

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status?
1. *Pseudotsuga menziesii*	20	Yes	FACU
2. *Acer macrophyllum*	30	Yes	FACU
3. *Thuja plicata*	30	Yes	FAC
4.			
5.			
50%= 40 20%= 16 Total Cover: **80**			
Sapling/Shrub Stratum (Plot size:)			
1. *Gaultheria shallon*	5	No	FACU
2. *Rubus spectabilis*	25	Yes	FAC
3.			
4.			
5.			
50%= 15 20%= 6 Total Cover: **30**			
Herb Stratum (Plot size:)			
1. *Polystichum munitum*	40	Yes	FACU
2. *Urtica dioica*	20	Yes	FAC
3. *Tolmiea menziesii*	3	No	FAC
4. *Geranium robertianum*	2	No	FACU
5.			
6.			
7.			
8.			
9.			
50%= 32.5 20%= 13 Total Cover: **65**			
Woody Vine Stratum (Plot size:)			
1.			
2.			
Total Cover: **0**			
% Bare Ground in Herb Stratum **35** % Cover of Biotic Crust			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: **3** (A)

Total Number of Dominant Species Across All Strata: **6** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **50%** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	**0**	x1 =	**0**
FACW species	**0**	x2 =	**0**
FAC species	**78**	x3 =	**234**
FACU species	**97**	x4 =	**388**
UPL species	**0**	x5 =	**0**
Column Totals:	**175** (A)		**622** (B)

Prevalence Index = B/A = **3.6**

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation

____ 2 - Dominance Test is >50%

____ 3 - Prevalence Index is ≤3.0[1]

____ 4 - Morphological Adaptation[1] (Provide supporting data in Remarks or on a separate sheet)

____ 5 - Wetland Non-Vascular Plants[1]

____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? **Yes** ____ **No X**

Remarks:

SOIL

Sampling Point: SP21.94R-UP2

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-14	10YR3/3	100					Sandy Loam	
14-18	7.5YR3/4	40					Sandy Loam	Mixed Matrix
	10YR3/3	60						
18-20	7.5YR3/4	100					Sandy Loam	

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Muck Mineral (S1)
- ___ Sandy gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

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

[3]Indicators 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** **X**

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes _____ No **X** Depth (inches): _____

Water table Present? Yes _____ No **X** Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No **X** Depth (inches): _____

Wetland Hydrology Present? **Yes** _____ **No** **X**

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

Remarks:

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

Project/Site: I-405, SR522 to SR527 Capacity Improvement City/County: King Sampling Date: 3/14/2019

Applicant/Owner: WSDOT State: WA Sampling Point: SP 22.11R-WET

Investigators: Dalzell, Reibel Section, Township, Range: Sec 17/T26N/R05E

Landform (hillslope, terrace, etc.): Depression Local Relief (concave, convex, none): Concave Slope(%): 0

Subregion (LRR): A Lat: 47.735367 Long: -122.187943 Datum: WGS84

Soil Map Unit Name: Arents, Alderwood material, 6 to 15 percent slopes NWI Classification: PSS1

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

Are Vegetation: ____ Soil ____ or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

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

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

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

Remarks:

Sample plot is located in Wetland 22.11R; all 3 criteria are present.

VEGETATION – Use scientific names of plants.

Tree Statum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
		= Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1. Rubus spectabilis	70	Yes	FAC
2. Alnus rubra	10	No	FAC
3. Populus balsamifera	10	No	FAC
4. Rubus armeniacus	5	No	FAC
5.			
	95	= Total Cover	
Herb Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
		= Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
		= Total Cover	

% Bare Ground in Herb Stratum 100 % Cover of Biotic Crust ____

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x1=	
FACW species		x2=	0
FAC species	95	x3=	285
FACU species		x4=	0
UPL species		x5=	0
Column Totals:	95 (A)		285 (B)

Prevalence Index = B/A= 3.00

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

No herbaceous was present at the sample plot. Sample plot meets dominance test and prevalence index for hydrophytic vegetation.

SOIL

Sampling Point: SP 22.11R-WET

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-14	10YR2/1	100					Silt Loam	
14-18	2.5Y5/2	95	10YR4/6	5	C	M	Loamy Sand	Gravel inclusion

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (except MLRLA 1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes X No ___

Remarks:

This sample plot was located at the edge of the wetland as the majority of the wetland is located outside of the WSDOT ROW. With the presence of hydrophytic vegetation and hydrology, the sample plot is assumed to have a continued depleted matrix below 18 inches and assumed to meet hydric soil indicator for A12.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Tables (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aeriel Imagery (B
- ___ Sparsley Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MRLA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Stained Leaves (B9) (**MRLA 1, 2, 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aeriel Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes X No ___ Depth (inches): 14.0

Saturation Present? Yes X No ___ Depth (inches): 6.0

(includes capillary fringe)

Wetland Hydrology Present? **Yes X No** ___

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

Remarks:

This sample plot was located at the edge of the wetland as the majority of the wetland is located outside of the WSDOT ROW. Sample plot meets wetland hydrology indicator for A3.

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

Project/Site: I-405, SR522 to SR527 Capacity Improvement City/County: King Sampling Date: 3/14/2019

Applicant/Owner: WSDOT State: WA Sampling Point: SP 22.11R-UP

Investigators: Dalzell, Reibel Section, Township, Range: Sec 17/T26N/R05E

Landform (hillslope, terrace, etc.): Depression Local Relief (concave, convex, none): None Slope(%): 15

Subregion (LRR): A Lat: 47.736202 Long: -122.187531 Datum: WGS84

Soil Map Unit Name: Arents, Alderwood material, 6 to 15 percent slopes NWI Classification: UPL

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

Are Vegetation: ____ Soil ____ or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

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

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

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

Remarks:

Sample plot is not located in a wetland; 2 out of 3 criteria are absent.

VEGETATION – Use scientific names of plants.

	Absolute	Dominant	Indicator
Tree Statum (Plot size:)	% Cover	Species?	Status
1. Populus balsamifera	30	Yes	FAC
2.			
3.			
4.			
	30	= Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1. Populus balsamifera	20	Yes	FAC
2. Rubus armeniacus	10	Yes	FAC
3.			
4.			
5.			
	30	= Total Cover	
Herb Stratum (Plot size:)			
1. Poa pratensis	30	Yes	FAC
2. Cardamine oligosperma	3	No	FAC
3. Taraxacum officinale	3	No	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	36	= Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
		= Total Cover	

% Bare Ground in Herb Stratum 64 % Cover of Biotic Crust

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x1=	
FACW species		x2=	0
FAC species	93	x3=	279
FACU species	3	x4=	12
UPL species		x5=	0
Column Totals:	96 (A)		291 (B)

Prevalence Index = B/A= 3.03

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

____ 3 - Prevalence Index is ≤3.0[1]

____ 4 - Morphological Adaptations[1] (Provide data in Remarks or on a separate sheet)

____ 5 - Wetland Non-Vascular Plants[1]

____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

This sample plot is located on the fill prism. Sample plot meets dominance test for hydrophytic vegetation.

SOIL

Sampling Point: SP 22.11R-UP

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-19	10YR4/3	100					Loamy Sand	Likely fill.

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (except MLRLA 1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

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

[3]Indicators 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 X

Remarks:

No hydric soils are present in the sample plot.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Tables (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aeriel Imagery (B
- ___ Sparsley Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MRLA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Stained Leaves (B9) (**MRLA 1, 2, 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aeriel Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): _____

Water Table Present? Yes ___ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): _____

Wetland Hydrology Present? **Yes** ___ **No** X

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

Remarks:

No wetland hydrology indicators are present in the sample plot.

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

Project/Site: Brickyard | City/County: Bothell/King | Sampling Date: 11/13/2019
Applicant/Owner: WSDOT | State: WA | Sampling Point: 22.24L-WET
Investigator(s): M. Dalzell, S. Reibel | Section, Township, Range: 17/T26N/R05E
Landform (hillslope, terrace, etc.): terrace | Local relief (concave, convex, none): concave | Slope: 0%
Subregion (LRR): Northwest Forests and Coast (LRR A) | Lat: 47.73770164 | Long: -122.18920344 | Datum: WGS84
Soil Map Unit Name: Arents, Alderwood material, 6 to 15 percent slopes | NWI Classification: UPL
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" Present? Yes X 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 **X** No ____
Hydric Soil Present? Yes **X** No ____
Wetland Hydrology Present? Yes **X** No ____

Is the Sampled Area within a Wetland? **Yes X** **No** ____

Plot located in NE corner of Wetland 22.24L.

VEGETATION

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status?
1. *Alnus rubra*	20	Yes	FAC
2. *Populus balsamifera*	40	Yes	FAC
3.			
4.			
5.			
50%= 30 20%= 12 Total Cover: **60**			
Sapling/Shrub Stratum (Plot size: ____)			
1. *Salix sitchensis*	15	Yes	FACW
2. *Rubus armeniacus*	5	Yes	FAC
3.			
4.			
5.			
50%= 10 20%= 4 Total Cover: **20**			
Herb Stratum (Plot size: ____)			
1. *Ranunculus repens*	80	Yes	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
50%= 40 20%= 16 Total Cover: **80**			
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
Total Cover: **0**			
% Bare Ground in Herb Stratum **20** % Cover of Biotic Crust ____			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: **5** (A)
Total Number of Dominant Species Across All Strata: **5** (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: **100%** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	**0**	x1 =	**0**
FACW species	**15**	x2 =	**30**
FAC species	**145**	x3 =	**435**
FACU species	**0**	x4 =	**0**
UPL species	**0**	x5 =	**0**
Column Totals:	**160** (A)		**465** (B)

Prevalence Index = B/A = **2.9**

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? **Yes X** **No** ____

Remarks:

SOIL

Sampling Point: 22.24L-WET

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-7	10YR4/3	100					Loamy Sand	
7-18	10YR4/2	90	10YR5/6	10	C	M	Loamy Sand	

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Muck Mineral (S1)
- ___ Sandy gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ___ Loamy Gleyed Matrix (F2)
- **X** Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? **Yes** **X** **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- **X** High Water Table (A2)
- **X** Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes ___	No **X**	Depth (inches): ___		
Water table Present?	Yes **X**	No ___	Depth (inches): 12		
Saturation Present? (includes capillary fringe)	Yes **X**	No ___	Depth (inches): 7	**Wetland Hydrology Present?**	**Yes** **X** **No** ___

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

Remarks:

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

Project/Site: Brickyard | City/County: Bothell/King | Sampling Date: 11/13/2019
Applicant/Owner: WSDOT | State: WA | Sampling Point: 22.24L-UP
Investigator(s): M. Dalzell, S. Reibel | Section, Township, Range: 17/T26N/R05E
Landform (hillslope, terrace, etc.): terrace | Local relief (concave, convex, none): concave | Slope: 0
Subregion (LRR): Northwest Forests and Coast (LRR A) | Lat: 47.73774021 | Long: -122.18903956 | Datum: WGS84
Soil Map Unit Name: Arents, Alderwood material, 6 to 15 percent slopes | NWI Classification: UPL
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks)
Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" Present? Yes X No
Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Plot located NE of Wetland 22.24L.

VEGETATION

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status?
1.			
2.			
3.			
4.			
5.			
50%= 0 20%= 0 Total Cover: **0**			
Sapling/Shrub Stratum (Plot size:)			
1. *Rubus armeniacus*	15	Yes	FAC
2. *Cytisus scoparius*	5	Yes	UPL
3.			
4.			
5.			
50%= 10 20%= 4 Total Cover: **20**			
Herb Stratum (Plot size:)			
1. *Agrostis stolonifera*	60	Yes	FAC
2. *Plantago lanceolata*	22	Yes	FACU
3. *Vicia americana*	3	No	FAC
4. *Crepis capillaris*	5	No	FACU
5. *Dactylis glomerata*	5	No	FACU
6. *Rumex acetosella*	5	No	FACU
7.			
8.			
9.			
50%= 50 20%= 20 Total Cover: **100**			
Woody Vine Stratum (Plot size:)			
1.			
2.			
Total Cover: **0**			
% Bare Ground in Herb Stratum **0** % Cover of Biotic Crust			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: **2** (A)

Total Number of Dominant Species Across All Strata: **4** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **50%** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	**0**	x1 =	**0**
FACW species	**0**	x2 =	**0**
FAC species	**78**	x3 =	**234**
FACU species	**37**	x4 =	**148**
UPL species	**5**	x5 =	**25**
Column Totals:	**120** (A)		**407** (B)

Prevalence Index = B/A = **3.4**

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? **Yes** **No X**

Remarks:

SOIL

Sampling Point: 22.24L-UP

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR3/2	100					Sandy Loam	
10-17	2.5Y4/2	100					Sandy Loam	gravel inclusion

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Muck Mineral (S1)
- ___ Sandy gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: compacted gravel

Depth (inches): 17

Hydric Soil Present? **Yes** ___ **No** **X**

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- **X** Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes ___ No **X** Depth (inches): ___

Water table Present? Yes ___ No **X** Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes **X** No ___ Depth (inches): 10

Wetland Hydrology Present? **Yes** **X** **No** ___

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

Remarks: Saturation present at 10 inches due to water coming out of pockets from 8 to 11 inches. Soild dry below 11 inches.

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

Project/Site: Brickyard | City/County: Bothell/King | Sampling Date: 12/20/2019

Applicant/Owner: WSDOT | State: WA | Sampling Point: SP22.33L-UP

Investigator(s): M. Dalzell, S. Reibel | Section, Township, Range: 17/T26N/R05E

Landform (hillslope, terrace, etc.): hillslope | Local relief (concave, convex, none): none | Slope: 0%

Subregion (LRR): Northwest Forests and Coast (LRR A) | Lat: 47.73959067 | Long: -122.18916517 | Datum: WGS84

Soil Map Unit Name: Arents, Alderwood material, 6 to 15 percent slopes | NWI Classification: UPL

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

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" Present? Yes X 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 **X**	No	
Hydric Soil Present?	Yes	No **X**	**Is the Sampled Area within a Wetland?** Yes	No **X**
Wetland Hydrology Present?	Yes	No **X**	

Plot located in a mapped wetland.

VEGETATION

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status?
1. *Alnus rubra*	30	Yes	FAC
2. *Ilex aquifolium*	10	Yes	FACU
3.			
4.			
5.			
50%= 20 20%= 8 Total Cover: **40**			
Sapling/Shrub Stratum (Plot size:)			
1. *Rubus armeniacus*	40	Yes	FAC
2. *Rubus spectabilis*	5	No	FAC
3.			
4.			
5.			
50%= 22.5 20%= 9 Total Cover: **45**			
Herb Stratum (Plot size:)			
1. *Rubus ursinus*	10	Yes	FACU
2. *Ranunculus repens*	25	Yes	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
50%= 17.5 20%= 7 Total Cover: **35**			
Woody Vine Stratum (Plot size:)			
1.			
2.			
Total Cover: **0**			
% Bare Ground in Herb Stratum **65** % Cover of Biotic Crust			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: **3** (A)

Total Number of Dominant Species Across All Strata: **5** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **60%** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	**0**	x1 =	**0**
FACW species	**0**	x2 =	**0**
FAC species	**100**	x3 =	**300**
FACU species	**20**	x4 =	**80**
UPL species	**0**	x5 =	**0**
Column Totals:	**120** (A)		**380** (B)

Prevalence Index = B/A = **3.2**

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes **X** No ____

Remarks:

SOIL

Sampling Point: SP22.33L-UP

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR2/2	100					Sandy Loam	
8-18	10YR3/3	100					Sandy Loam	Gravel inclusion at 9' inches

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Muck Mineral (S1)
- ___ Sandy gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

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

[3]Indicators 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** **X**

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes ___ No **X** Depth (inches): _____

Water table Present? Yes ___ No **X** Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No **X** Depth (inches): _____

Wetland Hydrology Present? **Yes** ___ **No** **X**

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

Remarks:

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

Project/Site: Brickyard City/County: Bothell/King Sampling Date: 11/13/2019
Applicant/Owner: WSDOT State: WA Sampling Point: SP22.34L-UP
Investigator(s): M. Dalzell, S. Reibel Section, Township, Range: 17/T25N/R05E
Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): none Slope: 0%
Subregion (LRR): Northwest Forests and Coast (LRR A) Lat: 47.73906409 Long: -122.18970798 Datum: WGS84
Soil Map Unit Name: Arents, Alderwood material, 6 to 15 percent slopes NWI Classification: UPL
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks)
Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" Present? Yes X 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	**X**	No		
Hydric Soil Present?	Yes		No	**X**	**Is the Sampled Area within a Wetland?** Yes No **X**
Wetland Hydrology Present?	Yes		No	**X**	

Plot located in a mapped wetland.

VEGETATION

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status?
1. *Alnus rubra*	30	Yes	FAC
2. *Pinus contorta*	10	Yes	FAC
3.			
4.			
5.			
50%= 20 20%= 8 Total Cover:	**40**		
Sapling/Shrub Stratum (Plot size:)			
1. *Rubus armeniacus*	50	Yes	FAC
2. *Ilex aquifolium*	10	No	FACU
3. *Rubus laciniatus*	5	No	FACU
4.			
5.			
50%= 32.5 20%= 13 Total Cover:	**65**		
Herb Stratum (Plot size:)			
1. *Phalaris arundinacea*	70	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
50%= 35 20%= 14 Total Cover:	**70**		
Woody Vine Stratum (Plot size:)			
1.			
2.			
Total Cover:	**0**		
% Bare Ground in Herb Stratum **30** % Cover of Biotic Crust			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: **4** (A)
Total Number of Dominant Species Across All Strata: **4** (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: **100%** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	**0**	x1 =	**0**
FACW species	**70**	x2 =	**140**
FAC species	**90**	x3 =	**270**
FACU species	**15**	x4 =	**60**
UPL species	**0**	x5 =	**0**
Column Totals:	**175** (A)		**470** (B)

Prevalence Index = B/A = **2.7**

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes **X** No

Remarks: Plot located in a previously mapped wetland.

SOIL

Sampling Point: SP22.34L-UP

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR3/2	100					Sandy Loam	
6-18	2.5Y4/3	95	10YR5/6	5	C	M	Sandy Loam	Gravel inclusion

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Muck Mineral (S1)
- ___ Sandy gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

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

[3]Indicators 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** **X**

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes ___ No **X** Depth (inches): _____

Water table Present? Yes ___ No **X** Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No **X** Depth (inches): _____

Wetland Hydrology Present? **Yes** ___ **No** **X**

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

Remarks:

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

Project/Site: Brickyard | City/County: Bothell/King | Sampling Date: 11/13/2019

Applicant/Owner: WSDOT | State: WA | Sampling Point: SP22.40L-UP

Investigator(s): M. Dalzell, S. Reibel | Section, Township, Range: 17/T26N/R05E

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): none | Slope: 3%

Subregion (LRR): Northwest Forests and Coast (LRR A) | Lat: 47.73959067 | Long: -122.18916517 | Datum: WGS84

Soil Map Unit Name: Arents, Alderwood material, 6 to 15 percent slopes | NWI Classification: UPL

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

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" Present? Yes X No ____

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

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

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

Verification plot of a previously delineated wetland. Point in the middle of the mapped wetland.

VEGETATION

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status?
1.			
2.			
3.			
4.			
5.			
50%= 0 20%= 0 Total Cover: **0**			
Sapling/Shrub Stratum (Plot size: ____)			
1. *Rubus armeniacus*	40	Yes	FAC
2. *Cytisus scoparius*	15	Yes	UPL
3. *Sambucus racemosa*	5	No	FACU
4.			
5.			
50%= 30 20%= 12 Total Cover: **60**			
Herb Stratum (Plot size: ____)			
1. *Rubus ursinus*	75	Yes	FACU
2. *Cirsium arvense*	25	Yes	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
50%= 50 20%= 20 Total Cover: **100**			
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
Total Cover: **0**			
% Bare Ground in Herb Stratum **0** % Cover of Biotic Crust			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: **2** (A)

Total Number of Dominant Species Across All Strata: **4** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **50%** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	**0**	x1 =	**0**
FACW species	**0**	x2 =	**0**
FAC species	**65**	x3 =	**195**
FACU species	**80**	x4 =	**320**
UPL species	**15**	x5 =	**75**
Column Totals:	**160** (A)		**590** (B)

Prevalence Index = B/A = **3.7**

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation

____ 2 - Dominance Test is >50%

____ 3 - Prevalence Index is ≤3.0[1]

____ 4 - Morphological Adaptation[1] (Provide supporting data in Remarks or on a separate sheet)

____ 5 - Wetland Non-Vascular Plants[1]

____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? **Yes** ____ **No** **X**

Remarks:

SOIL

Sampling Point: SP22.40L-UP

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR3/2	100					Sandy Loam	

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Muck Mineral (S1)
- ___ Sandy gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

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

[3]Indicators 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** **X**

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes ___ No **X** Depth (inches): _____

Water table Present? Yes ___ No **X** Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No **X** Depth (inches): _____

Wetland Hydrology Present? **Yes** ___ **No** **X**

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

Remarks:

Appendix E Wetland Rating Forms

Appendix F Wetland Functions and Values Summary Tables

Wetland Functions and Values Summary

Wetland ID: **21.94R** Project: **I-405 Brickyard** Biologist: **M. Dalzell, S. Reibel**

Date: **11/15/19** Cowardin Class: **PSS/PFO** Ecology Rating: **III**

Function/Value	***Function Present***		***Rationale/Comments***
	Y	***N***	
Flood Flow Alteration	Y		Wetland has areas of seasonal ponding, storing water and delaying inputs to downstream areas in times of heavy precipitation.
Sediment Removal	Y		Wetland provides areas of seasonal inundation to remove sediment.
Nutrient and Toxicant Removal	Y		Wetland provides areas of seasonal inundation from overbank flooding from Juanita Creek that removes nutrients and toxicants.
Erosion Control & Shoreline Stabilization	Y		Juanita Creek flows through this wetland. Dense scrub shrub vegetation along these channels attenuates high flows and prevents erosion.
Production of Organic Matter and its Export	Y		This wetland produces organic material that can be transported outside the wetland via Juanita Creek.
General Habitat Suitability	Y		This wetland has two Cowardin classes with low interspersion and two water regimes, and habitat structures including large downed woody debris and overhanging plants.
Habitat for Aquatic Invertebrates	Y		This wetland has multiple water regimes and provides habitat structures.
Habitat for Amphibians	Y		Wetland contains seasonally inundated areas with woody debris, and Juanita Creek flows through this wetland.
Habitat for Wetland-Associated Mammals		N	Permanent inundation not present.
Habitat for Wetland-Associated Birds	Y		Wetland has scrub-shrub and forested habitat, as well as perch structures and connectivity to undeveloped forested habitat to the east.
General Fish Habitat	Y		Wetland is located along Juanita Creek, which is a fish-bearing stream.
Native Plant Richness	Y		This wetland has some native species and has two Cowardin classes.
Educational or Scientific Value		N	No scientific or educational use due to minimal functions.
Uniqueness and Heritage		N	No unique or sensitive species or habitat present.

Wetland Functions and Values Form

Wetland ID: **22.11R**	Project: **I-405 Brickyard**	Biologist: **M. Dalzell, S. Reibel**
Date: **3/14/19**	Cowardin Class: **PSS**	Ecology Rating: **III**

Function/Value	***Function Present***		***Rationale/Comments***
	Y	***N***	
Flood Flow Alteration	Y		Wetland is a closed depressional system in a relatively flat area that is capable of retaining water during storm events. Floodwaters come as sheet flow rather than channel flow.
Sediment Removal	Y		Wetland provides minimal sediment removal because it is saturated only and has no areas of seasonal or permanent ponding.
Nutrient and Toxicant Removal	Y		Wetland does receive sheet flow from I-405 but provides minimal nutrient and toxicant removal because it is saturated only and has no indicators of seasonal flooding during the growing season.
Erosion Control & Shoreline Stabilization		N	Wetland is not associated with a water course or shoreline.
Production of Organic Matter and its Export		N	Wetland is a closed depressional system with no outlet.
General Habitat Suitability		N	Wetland is surrounded by development with I-405 to the west and a housing development to the east.
Habitat for Aquatic Invertebrates		N	Wetland does not contain areas of seasonal or permanent inundation.
Habitat for Amphibians		N	Wetland does not contain areas of seasonal or permanent inundation.
Habitat for Wetland-Associated Mammals		N	Permanent inundation not present.
Habitat for Wetland-Associated Birds		N	Wetland does not contain any open water or snags.
General Fish Habitat		N	Wetland is not associated with a fish-bearing water.
Native Plant Richness		N	This wetland is dominated by Himalayan blackberry.
Educational or Scientific Value		N	No scientific or educational use due to minimal functions.
Uniqueness and Heritage		N	No unique or sensitive species or habitat present.

Wetland Functions and Values Summary

Wetland ID: **22.24L** Project: **I-405 Brickyard** Biologist: **M. Dalzell, S. Reibel**

Date: **11/13/19** Cowardin Class: **PSS/PFO** Ecology Rating: **III**

Function/Value	***Function Present***		***Rationale/Comments***
	Y	***N***	
Flood Flow Alteration	Y		Wetland has areas of seasonal ponding, storing water and delaying inputs to downstream areas in times of heavy precipitation.
Sediment Removal	Y		Wetland provides areas of seasonal inundation to remove sediment.
Nutrient and Toxicant Removal	Y		Wetland provides areas of seasonal inundation and has indicators that flooding is a seasonal event during the growing season.
Erosion Control & Shoreline Stabilization	Y		Stream 22.25L flows through this wetland. Dense scrub shrub vegetation along the stream channel attenuates high flows and prevents erosion.
Production of Organic Matter and its Export	Y		This wetland produces organic material that can be transported outside the wetland via outlets on the west end of the wetland.
General Habitat Suitability	Y		This wetland has two Cowardin classes with low interspersion and two water regimes, and habitat structures including large downed woody debris, standing snags, and overhanging plants.
Habitat for Aquatic Invertebrates	Y		This wetland has multiple water regimes and provides habitat structures.
Habitat for Amphibians	Y		Wetland contains seasonally inundated areas with woody debris.
Habitat for Wetland-Associated Mammals		N	Permanent inundation not present.
Habitat for Wetland-Associated Birds	Y		Wetland has scrub-shrub and forested habitat, as well as perch structures.
General Fish Habitat		N	Stream 22.25L flows through the wetland, which is a seasonal non-fish habitat stream.
Native Plant Richness	Y		This wetland is dominated by native species.
Educational or Scientific Value		N	No scientific or educational use due to minimal functions.
Uniqueness and Heritage		N	No unique or sensitive species or habitat present.