

SEPA-20-0002 and EM-20-003

Rec'd 5-13-2020 DK

Critical Areas Report for Twin Transit Site 1820 N. National Ave Chehalis, Washington 98532

Prepared for:
RB Engineering, Inc.
PO Box 923
Chehalis, WA 98532

Project # 102.10

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SIGNATURE PAGE

The technical material and data contained in this document were prepared under the supervision and direction of the undersigned:

A handwritten signature in blue ink, appearing to read "Timothy J. Haderly". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

Timothy J. Haderly, Principal Scientist/Owner
Loowit Consulting Group, LLC

INTRODUCTION

Purpose and Need

Loowit Consulting Group, LLC (LCG) was retained by RB Engineering, Inc. (Applicant) to complete a critical areas investigation and report on a commercial property located at 1820 N. National Ave in Chehalis, Washington (Figure 1 & 2). LCG investigated wetland areas and applied jurisdictional buffers according to code requirements by the City of Chehalis. Access to the site is via driveway aprons off N. National Ave to the west and NE Median St to the south.

Future development at the subject site will require compliance with critical areas regulations under *Chehalis Municipal Code (CMC) Title 17, Division III: Environmental Districts*.

Site Description

The subject site consists of a two lots totaling approximately 0.95 acre of vacant property.

Subject site specifics include:

Site Address: 1820 N. National Ave, Chehalis, WA (Table 1)

Current Owner: Lewis Public Transportation Area

Tax Parcel Number: See Table 1

Legal Description: Section 20, Township 14 North, Range 2 West, W.M.

Property Size: Approximately 0.95 acre

Jurisdiction: City of Chehalis

Table 1: Summary of Subject Site

Parcel #	Address	City	Size (acres)
005605100003	1820 N. National Ave	Chehalis	0.46
005605100004	No address	Chehalis	0.49
Total			0.95

The subject site is located at 1820 N. National Ave in the northern portion of Chehalis, Washington (Figure 1) and has been previously used for commercial purposes. Existing driveways, parking lots, foundations, and building slabs are present at the site although no buildings are present. The subject site is situated on a flat historic fill pad with an earthen berm

located along the northern property boundary (Photograph 1). Access to the subject site is via asphalted aprons from N. National Ave and NE Median St (Photograph 2).



Photograph 1: Subject site looking south from the edge of the earthen berm along the north property boundary.



Photograph 2: Site access from N. National Ave on the right, subject site on the left. Looking south.

Land uses adjacent to the subject site include:

- To the South – Commercial

- To the North – Open space
- To the West – N. National Ave and commercial
- To the East – Commercial

METHODS

Desktop Review

Prior to visiting the subject site, LCG conducted a desktop review of readily available mapping resources and other pertinent information including:

- Lewis County Web Map (<http://ims.lewiscountywa.gov/webmaps/composite2/viewer.htm>). This source provided parcel information, aerial photographs, physical attributes, and other information from the Lewis County Assessor.
- Federal Emergency Management Agency. Flood Map Service Center. (<https://msc.fema.gov/portal/search>) This site includes updated flood maps for the United States.
- Google Earth Pro (<https://www.google.com/earth/>) This source provided recent and past aerial photographs of the project area.
- US Fish and Wildlife Service National Wetlands Inventory Wetlands Mapper (<https://www.fws.gov/wetlands/data/mapper.html>). This mapping source depicts wetlands and streams throughout the United States.
- US Department of Agriculture Natural Resources Conservation Service Web Soil Survey (<https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>). This source depicts mapped soils including hydric soils throughout the United States.
- Washington Department of Natural Resources Forest Practices Application Mapping Tool (<https://fpamt.dnr.wa.gov/default.aspx>). This mapping source depicts streams and wetlands in Washington State.
- Washington Department of Natural Resources Geologic Information Portal. (<https://www.dnr.wa.gov/programs-and-services/geology/geologic-hazards/landslides#find-mapped-landslides>). This site maps known geologic hazard areas in Washington State.
- Washington Department of Fish and Wildlife Salmonscape (<http://apps.wdfw.wa.gov/salmonscape/map.html>). This mapping source depicts streams and fish distribution in Washington State.
- Washington Department of Fish and Wildlife Priority Habitat and Species (<http://apps.wdfw.wa.gov/phsonthefweb/>). This mapping source depicts priority habitats and species throughout Washington State.

State Regulations

Wetlands are regulated by Washington Department of Ecology (Ecology) under the Water Pollution Control Act and the Shoreline Management Act. The State Environmental Policy Act

(SEPA) process is also used to identify potential wetland-related concerns early in the permitting process. All proposed direct and identified indirect impacts to wetlands are reviewed and approved/denied by Ecology using the regulations previously listed.

Streams are regulated by Washington Department of Fish and Wildlife under the State Hydraulic Code, Chapter 77.55 Revised Code of Washington. Projects involving activities within, over, or beneath jurisdictional streams are subject to the Hydraulic Project Approval (HPA) permitting process administered by WDFW.

Federal Regulations

Wetlands are regulated as “waters of the United States” under Section 404 of the Clean Water Act. Section 404 regulations are administered by the US Army Corps of Engineers (USACE).

Local Regulations

Critical Areas are regulated by *City of Chehalis Municipal Code (CMC) Title 17, Division III: Environmental Districts*.

Field Investigations

On February 27, 2020, LCG collected site information, delineated jurisdictional wetlands, and verified site conditions. Weather conditions at the time of site investigation were clear (60°F) with 0.0 inches of precipitation the day of field work. Recorded weather history from the Washington State University Weather Station in Chehalis, Washington two weeks prior to visiting the site is characterized by high temperatures ranging from 43.4 to 58.7°F and low temperatures ranging from 24.5 to 39.8°F. Total recorded precipitation two weeks prior to the site visit (February 13th to 26th) was recorded at 1.29 inches (Table 2, Appendix C).

Table 2: Daily Weather Data Summary at Chehalis Weather Station - Chehalis, Washington. Washington State University AgWeatherNet (Appendix C)

Date	Minimum Temp (Deg F)	Maximum Temp (Deg F)	Total Precipitation (in)
2/13/2020	33.1	44.1	0.12
2/14/2020	38	47.7	0.14
2/15/2020	39.1	43.4	0.55
2/16/2020	33.6	47.3	0.05
2/17/2020	30.8	50.5	0
2/18/2020	30.5	49.2	0
2/19/2020	24.7	55.7	0
2/20/2020	24.5	58.7	0
2/21/2020	27.2	57.6	0
2/22/2020	31.8	51.4	0
2/23/2020	39.8	47.4	0.42
2/24/2020	32.7	48.3	0

2/25/2020	30.1	52.7	0.01
2/26/2020	35.6	54.9	0
		Total	1.29
2/27/2020	31	61.5	0

Site investigation work tasks included:

- Documentation of current site conditions
- Documentation of adjacent land uses
- Delineation of wetlands
- Documentation of wetland/upland conditions with Test Plots
- Collection of site photographs

Wetlands were delineated according to methods outlined in the 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)*. Data documenting vegetation, soils, and hydrology were collected and used to determine wetland and uplands at the site (Appendix A). Wetland boundaries were delineated using documented test plots and subsequently surveyed by LCG using GPS equipment with a horizontal accuracy of ± 11 feet.

Vegetation

Vegetation at the site is comprised of invasive species and a few native trees and shrubs. Table 3 summarizes wetland and upland vegetation observed at the subject site.

Table 3: Site Vegetation Observed

Scientific Name	Common Name	Wetland Indicator Code
<i>Alnus rubra</i>	Red Alder	FAC
<i>Carex obnupta</i>	Slough Sedge	OBL
<i>Phalaris arundinacea</i>	Reed Canary Grass	FACW
<i>Populus balsamifera</i>	Black Cottonwood	FAC
<i>Rubus armeniacus</i>	Himalayan Blackberry	FAC
<i>Salix lasiandra</i>	Pacific Willow	FACW

Wetland Indicator Code

OBL = Obligate (>99% found in wetlands)

FACW = Facultative Wetland (>67% to 99% found in wetlands)

FAC = Facultative (33% to 67% found in wetlands)

FACU = Facultative Upland (1% to <33% found in wetlands)

UPL = Obligate Upland (<1% found in wetlands)

Soils

According to the US Department of Agriculture Natural Resources Conservation Service (NRCS) Web Soil Survey for Lewis County, soils at the subject site are mapped as (Table 4 & Figure 4):

Table 4: Soil Summary.

Soil #	Soil Name	Slope %	Hydric %
247	Xerorthents, spoils	0-20	0

Historic land disturbance activities including general grading and filling have historically altered natural soil conditions at the site resulting in soils that may be somewhat different than those mapped by NRCS.

Hydrology

The subject site is situated on a fill pad within a floodplain area associated with Salzer Creek and the Chehalis River. A larger wetland area north of the subject site collects surface water before it discharges to maintained drainage ditches along N. National Ave. There are no mapped streams within or adjacent to the subject site (Figure 6).

Mapping

Wetland boundary flagging, roads, property boundaries, and other site features were derived from public sources and augmented with survey data from Foresight Surveying, Inc. and GPS points collected by LCG, LLC using portable GPS equipment with a horizontal accuracy of ± 11 feet.

The National Wetlands Inventory Map (Figure 5) identifies a Palustrine Emergent (PEM) wetland north of the subject site.

RESULTS and DISCUSSION

Wetlands

A single wetland area (Wetland "A") was located and delineated immediately north of the subject site within a historic floodplain area of Salzer Creek and the Chehalis River (Figure 1). Wetland areas were delineated using vegetation, soil, and hydrology data gathered from paired plots contained in Appendix A.

Wetland "A" is an emergent/scrub-shrub/forested depressional wetland (Figure 3) with an improving water quality score of 7, a hydrologic score of 8, and a habitat score of 6 for a total score of 21 resulting in a rating of Category II using the Washington Department of Ecology Rating System for Western Washington, 2014 Update (Table 5 & Appendix B). Wetland "A" is located within a depression area bounded by N. National Ave to the west, a large fill pad to the north, commercial development to the east, and fill pads to the south. The primary sources of hydrology are local run-off and seasonal shallow groundwater. The majority of Wetland "A" is vegetated with invasive reed canary grass with scattered patches of willow, red alder, and black cottonwood.

Table 5: Wetland Summary.

Wetland ID	HGM ^A	Wetland Rating System ^B				Category ^B	Standard Buffer ^C (ft)
		Improving Water Quality	Hydro-logic	Habitat	Total		
Wetland "A"	Depressional	7	8	6	21	II	150 ^D

^A Hydrogeomorphic Classification

^B Washington State Wetland Rating System for Western Washington: 2014 Update

^C Chehalis Municipal Code (CMC) 17.23.030.C

^D Based on category of wetland and habitat score.

Wetland Buffers

CMC 17.23.030.C requires buffers on all jurisdictional wetlands according to the category of wetland and habitat score (Table 5). Wetland "A" requires a minimum 150-foot wide buffer. The buffer area at the subject site is comprised of historic fill material including soil, rocks, concrete, bricks, and other imported earthen debris. A 4 to 5 foot tall earthen berm is located immediately north of the north property boundary and is vegetated with Himalayan blackberry which are routinely mowed. The remaining portion of the wetland buffer is mostly devoid of vegetation and surfaced with gravel/asphalt/concrete making it non-functional. CMC 17.23.030. A exempts areas of buffers that are functionally isolated: "Buffers shall not include areas that are functionally and effectively disconnected from the wetland by a road or other substantially developed surface of sufficient width and with use characteristics such that buffer functions are not provided." Given that the majority of the on-site buffer is developed and offers little, if any, functional value, it seems prudent that the required 150-foot buffer could be reduced to a width that allows reasonable use of the site while offering adequate protection to the off-site wetland.

CONCLUSIONS

Development of the subject site into transit hub can be accomplished without significant impact to wetlands or functional wetland buffers (Figure 3). Table 6 summarizes critical areas located at the subject area and the buffer required to protect those areas. Given that the buffer is comprised of historic developments including a fill pad, berm, driveways, parking lots, and building slabs; it appears that CMC 17.23.030. A would exempt the developed area from the required 150-foot buffer.

Table 6: Critical Areas Summary.

Resource ID	Type ^A	Standard Buffer ^B (ft)
Wetland "A"	II	150

^A Washington Department of Natural Resources and TCC Title 24.

^B Chehalis Municipal Code (CMC) 17.23.030.C

LIMITATIONS

The findings and conclusions contained in this document were based on information and data available at the time this document was prepared and evaluated using standard Best Professional Judgement. LCG assumes no responsibility for the accuracy of information and data generated by others. Local, State, and Federal regulatory agencies may or may not agree with the findings and conclusions contained in this document.

REFERENCES

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US Fish and Wildlife Service National Wetlands Inventory Wetlands Mapper (<https://www.fws.gov/wetlands/data/mapper.html>).

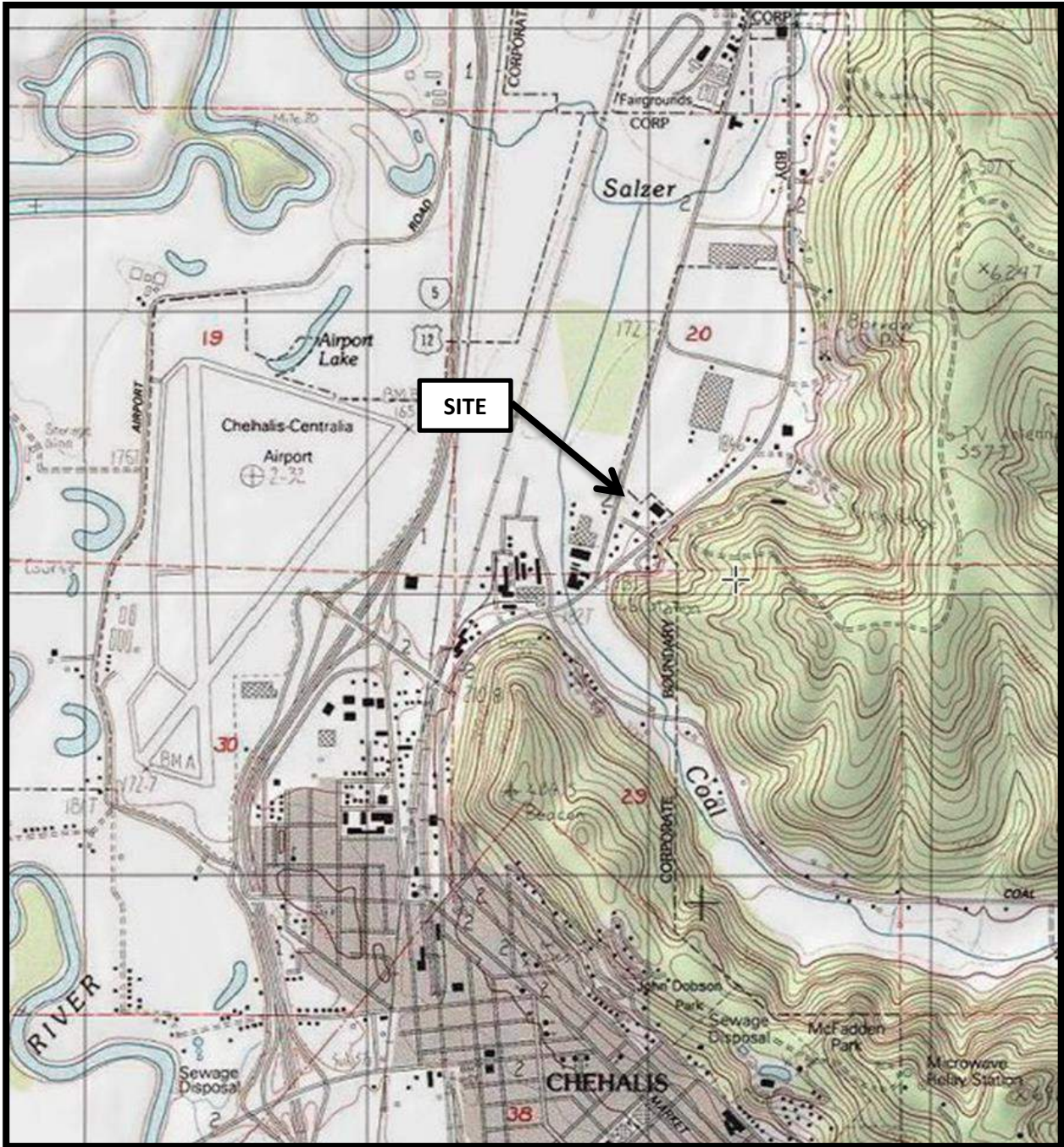
Washington Department of Natural Resources Forest Practices Application Mapping Tool (<https://fpamt.dnr.wa.gov/default.aspx>).

Washington Department of Fish and Wildlife Salmonscape (<http://apps.wdfw.wa.gov/salmonscape/map.html>).

Washington Department of Fish and Wildlife Priority Habitat and Species
(<http://apps.wdfw.wa.gov/phsontheweb/>).

FIGURES

- Figure 1 – Site Location Map
- Figure 2 – Parcel Map
- Figure 3 – Site Map
- Figure 4 – Soils Map
- Figure 5 - National Wetlands inventory Map
- Figure 6 – Stream Map

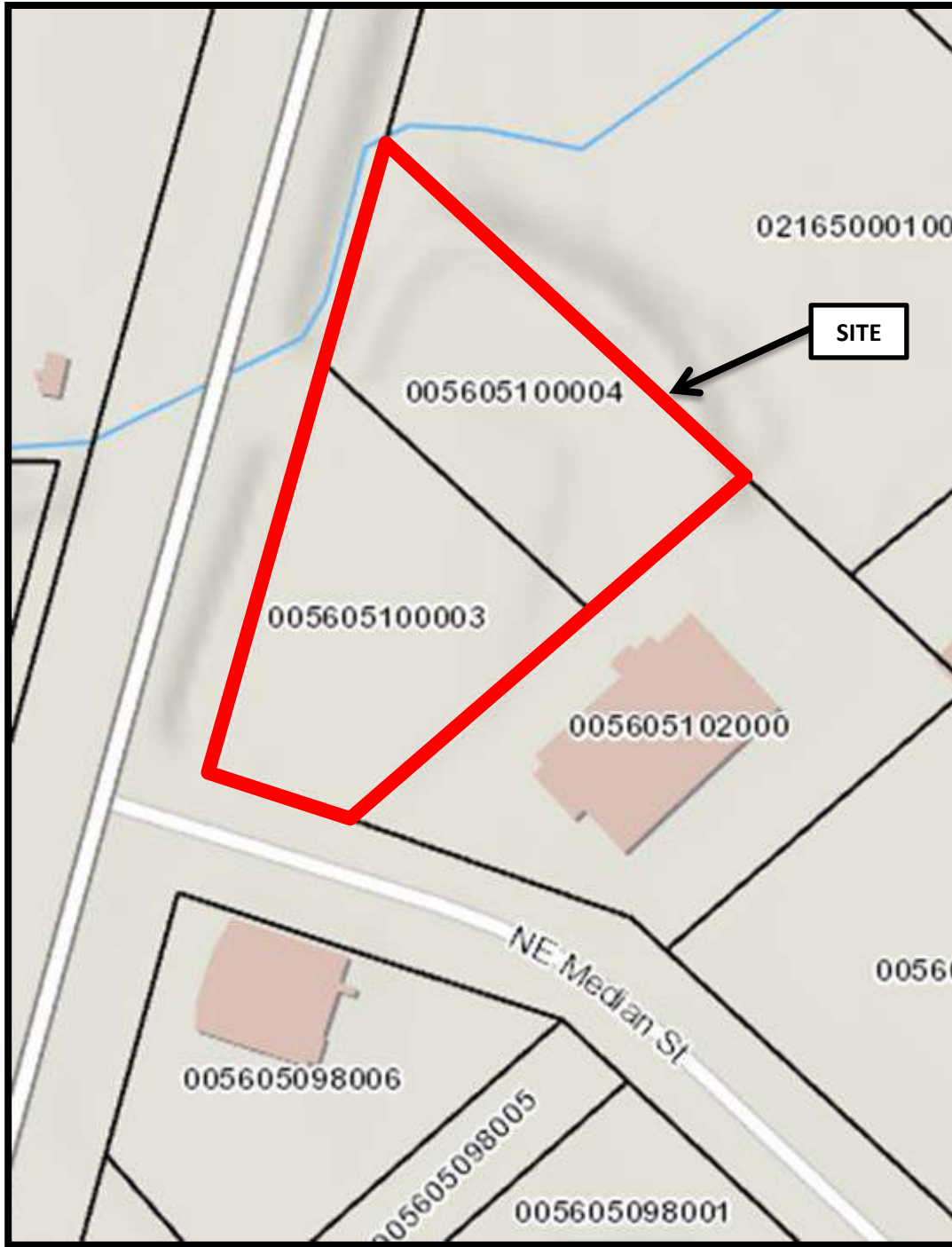


Not to scale



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Figure 1
Site Location Map
Twin Transit Site



Not to scale



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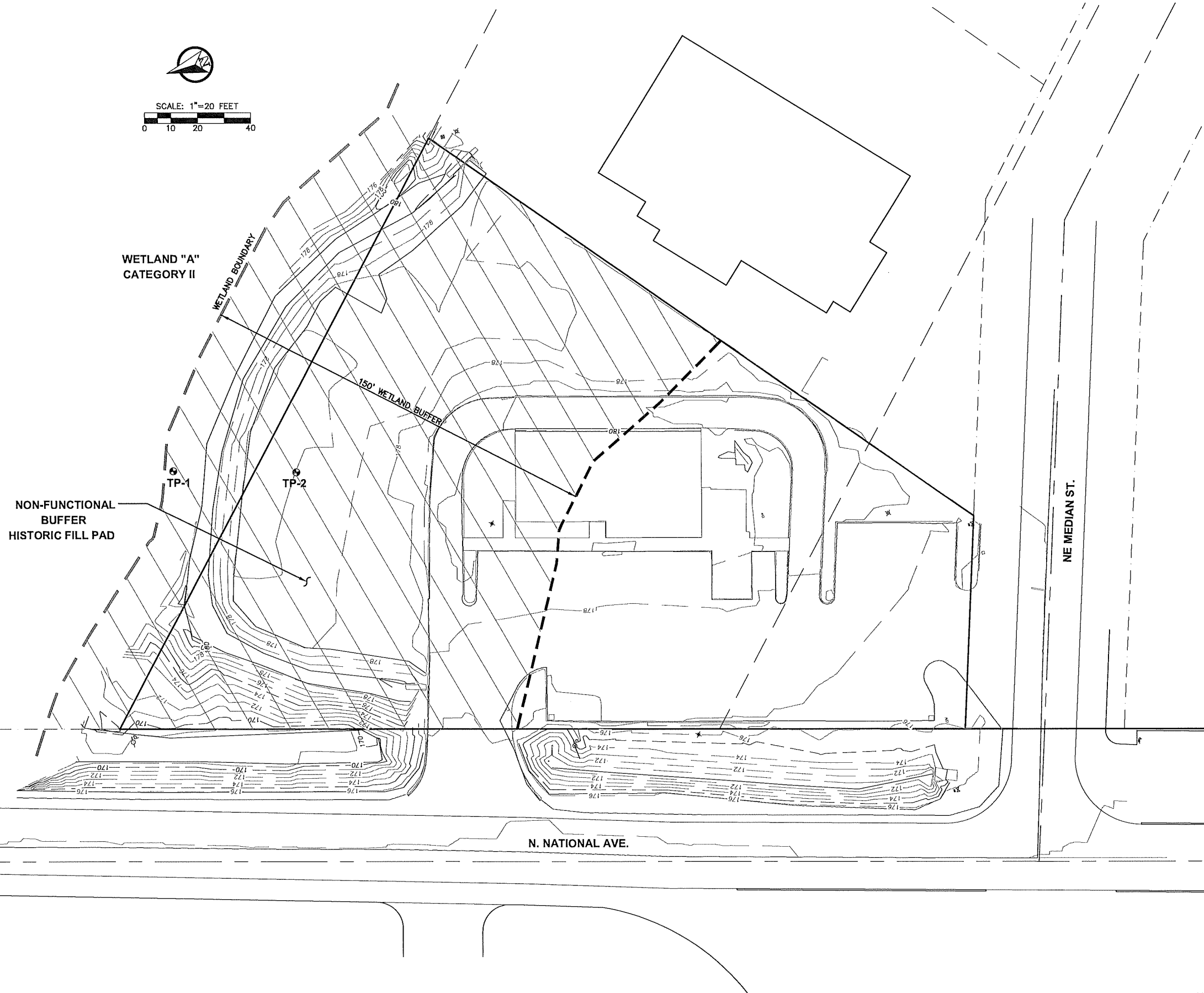
Figure 2
Parcel Map
Twin Transit Site

NORTH NATIONAL TWIN TRANSIT HUB

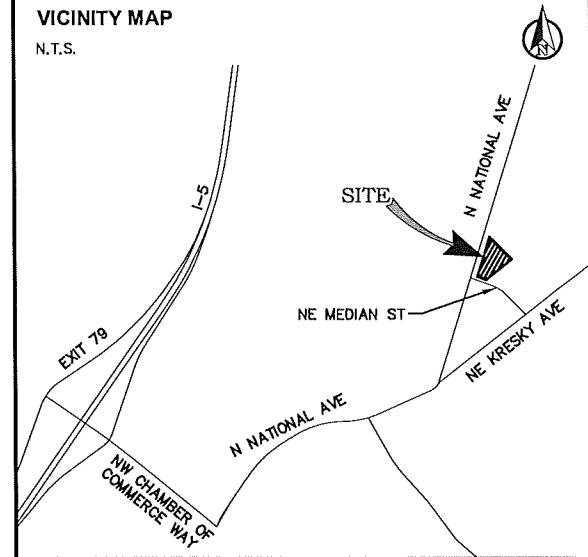
SECTION 20, TOWNSHIP 14 NORTH, RANGE 02 WEST
LEWIS COUNTY, WASHINGTON



SCALE: 1"=20 FEET
0 10 20 40



VICINITY MAP
N.T.S.



PROJECT INFORMATION

APPLICANT: ARON ROLLINS
TWIN TRANSIT
PARCEL NOS: 005605100003
SITE ADDRESS: 1820 N. NATIONAL AVE
CHEHALIS WA, 98532
ZONING: GC - GENERAL COMMERCIAL
SITE AREA: 0.95 ACRES
GRAOING: xx± CY FILL
SOILS: XERORTHENTS
SANITARY SEWER: CITY OF CHEHALIS
WATER: CITY OF CHEHALIS
FIRE DISTRICT: CITY OF CHEHALIS

NO.	DATE	REVISION

DESIGNED BY: RWB
DRAWN BY: ALE
CHECKED BY: RWB
DATE: X/XX/XX
SCALE: 1" = 20'

TWIN TRANSIT PROJECT
LEWIS COUNTY, WA.

FIGURE 3
WETLAND EXHIBIT MAP

RB Engineering
DESIGN - PERMIT - MANAGE
P.O. Box 923
CHEHALIS, WA 98532
OFF: (360) 740-8819
EMAIL: Office@rbengineers.com

811 Know what's below.
Call 811 before you dig.
JOB NUMBER: 19084
DRAWING NAME: 19084_EX1
EX 1
1 OF 1





Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
247	Xerorthents, spoils	1.1	100.0%
Totals for Area of Interest		1.1	100.0%

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Figure 4
Soils Map
Twin Transit Site



Wetlands

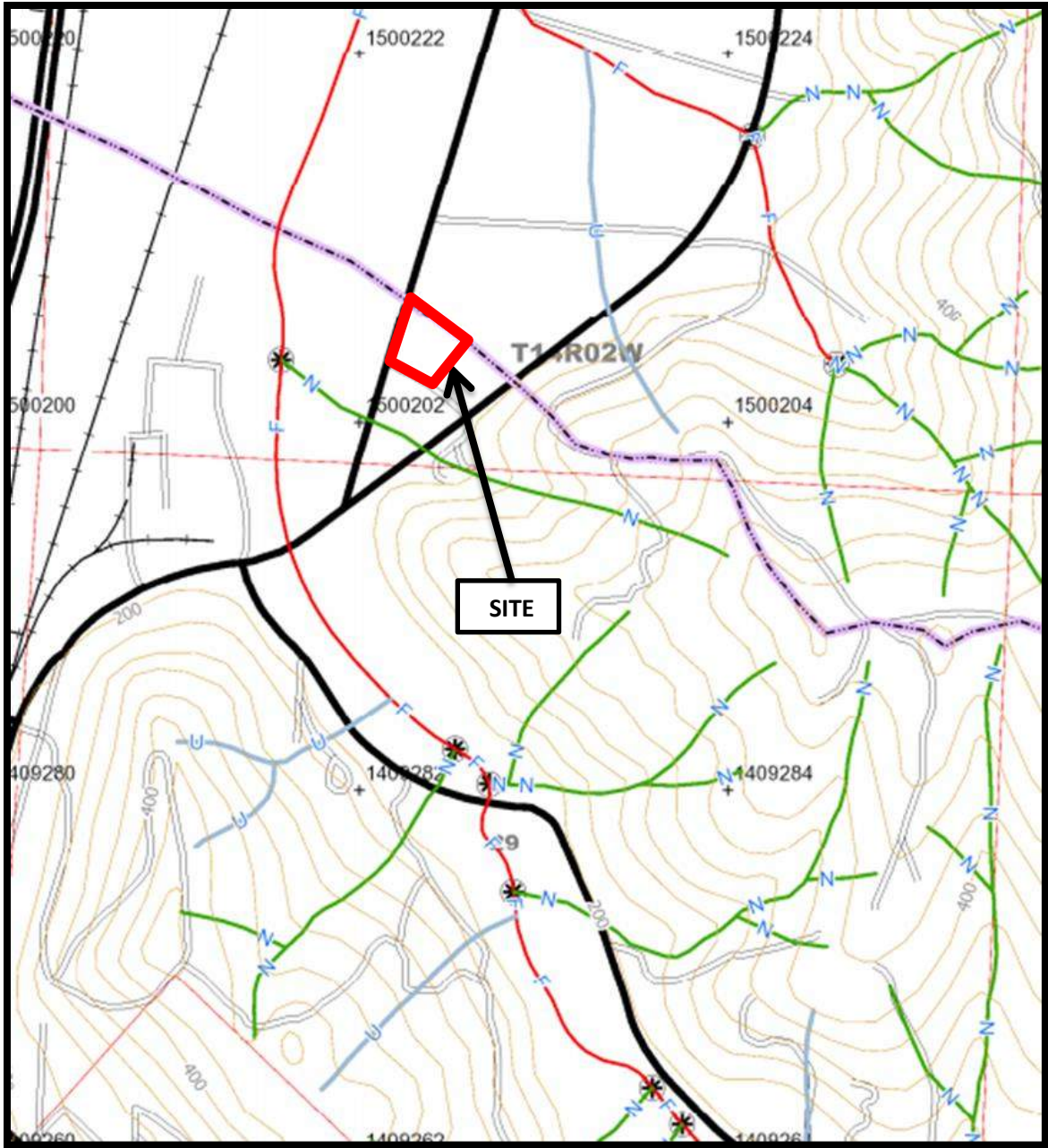
-  Estuarine and Marine Deepwater
-  Estuarine and Marine Wetland

-  Freshwater Emergent Wetland
-  Freshwater Forested/Shrub Wetland
-  Freshwater Pond

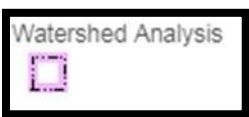
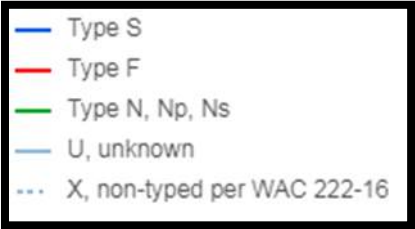
-  Lake
-  Other
-  Riverine

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Figure 5
National Wetlands Inventory Map
Twin Transit Site



Not to Scale



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Figure 6
Stream Map
Twin Transit Site

APPENDIX A - DATA FORMS

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

Project/Site: 1820 N. National Ave City/County: Chehalis/Lewis Sampling Date: 2/27/2020
 Applicant/Owner: Twin Transit/RB Engineering, Inc. State: WA Sampling Point: TP-1
 Investigator(s): T. Haderly Section, Township, Range: Section 20, Township 14 North, Range 2 West
 Landform (hillslope, terrace, etc.): Floodplain Local relief: Flat Slope (%): 0-3%
 Subregion (LRR): A Lat: 46.679592 Long: -122.962494 Datum: WGS84

Soil Map Unit Name: #247 Xerothents, spoils NWI classification: None
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain Remarks.)

Are Vegetation , Soil , or Hydrology significantly disturbed? Area "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks:

VEGETATION (Use scientific names)

	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet	
Tree Stratum (Plot size: <u>30</u> ft radius)				Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A)	
1. <u>Alnus rubra</u>	30%	yes	FAC	Total Number of Dominant Species Across All Strata: <u>5</u> (B)	
2. <u>Populus balsamifera</u>	20%	yes	FAC	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)	
3. _____	%				
4. _____	%				
Total Cover:	<u>50%</u>				
Sapling/Shrub Stratum (Plot size: <u>5</u> ft. radius)				Prevalence Index worksheet	
1. <u>Salix lasiandra</u>	20%	yes	FACW	Total % Cover of: _____ Multiply by:	
2. _____	%			OBL species	0 x 1= 0
3. _____	%			FACW species	0 x 2= 0
4. _____	%			FAC species	0 x 3= 0
5. _____	%			FACU species	0 x 4= 0
Total Cover:	<u>20%</u>			UPL species	0 x 5= 0
Herb Stratum (Plot size: <u>5</u> ft radius)				Column Totals: 0 (A) 0 (B)	
1. <u>Phalaris arundinacea</u>	90%	yes	FAC	Prevalence Index = B/A= _____	
2. <u>Carex obnupta</u>	30%	yes	OBL	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 – Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 – Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ 4 - Morphological Adaptations ¹ (Provide supporting data In Remarks or on a separate sheet) <input type="checkbox"/> Wetland Non-Vascular Plants ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)	
3. _____	%				
4. _____	%				
5. _____	%				
6. _____	%				
7. _____	%				
8. _____	%				
Total Cover:	<u>120%</u>				
Woody Vine Stratum (Plot size: <u>30</u> ft radius)				¹ Indicators of hydric soil and wetland hydrology Must be present, unless disturbed or problematic.	
1. _____	%				
2. _____	%				
Total Cover:	%			Hydrophytic Vegetation Present?	
% Bare Ground in Herb Stratum <u>0%</u>				Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	

Remarks:

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

Project/Site: 1820 N. National Ave City/County: Chehalis/Lewis Sampling Date: 2/27/2020
 Applicant/Owner: Twin Transit/RB Engineering, Inc. State: WA Sampling Point: TP-2
 Investigator(s): T. Haderly Section, Township, Range: Section 20, Township 14 North, Range 2 West
 Landform (hillslope, terrace, etc.): Floodplain Local relief: Flat Slope (%): 0-3%
 Subregion (LRR): A Lat: 46.679595 Long: -122.962893 Datum: WGS84
 Soil Map Unit Name: #247 Xerothents, spoils NWI classification: None

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

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soils Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks:	

VEGETATION (Use scientific names)

Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet
Tree Stratum (Plot size: <u>30</u> ft radius)				Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. _____	%	_____	_____	
2. _____	%	_____	_____	
3. _____	%	_____	_____	
4. _____	%	_____	_____	
Total Cover:	%	_____	_____	
Sapling/Shrub Stratum (Plot size: <u>5</u> ft. radius)				Prevalence Index worksheet Total % Cover of: _____ Multiply by: OBL species <u>0</u> x 1= <u>0</u> FACW species <u>0</u> x 2= <u>0</u> FAC species <u>0</u> x 3= <u>0</u> FACU species <u>0</u> x 4= <u>0</u> UPL species <u>0</u> x 5= <u>0</u> Column Totals: <u>0</u> (A) <u>0</u> (B) Prevalence Index = B/A= _____
1. _____	%	_____	_____	
2. _____	%	_____	_____	
3. _____	%	_____	_____	
4. _____	%	_____	_____	
Total Cover:	%	_____	_____	
Herb Stratum (Plot size: <u>5</u> ft radius)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 – Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 – Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ 4 - Morphological Adaptations ¹ (Provide supporting data In Remarks or on a separate sheet) <input type="checkbox"/> Wetland Non-Vascular Plants ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
1. _____	%	_____	_____	
2. _____	%	_____	_____	
3. _____	%	_____	_____	
4. _____	%	_____	_____	
5. _____	%	_____	_____	
6. _____	%	_____	_____	
7. _____	%	_____	_____	
Total Cover:	%	_____	_____	
Woody Vine Stratum (Plot size: <u>30</u> ft radius)				¹ Indicators of hydric soil and wetland hydrology Must be present, unless disturbed or problematic.
1. <u>Rubus armeniacus</u>	80%	yes	FAC	
2. _____	%	_____	_____	
Total Cover:	80%	_____	_____	
% Bare Ground in Herb Stratum <u>0%</u>				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks:				

SOIL

Sampling Point: TP-2

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-16	Various	100%		%			Various, Fill	
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				

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

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

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	Indicators for Problematic Hydric Soils
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sandy Mucky Minerals (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	

³Indicators of hydrophytic vegetation and Wetland hydrology must be present

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes No

Remarks: Area is comprised of fill material including soil, rock, sand, concrete, bricks, etc.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (min. of one required; check all that apply)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, & 4B) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Raised Ant Mounds (D6) (LRR A) <input type="checkbox"/> Frost-Heave Hummocks (D4)

Field Observations:

Surface Water Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Depth (Inches): _____	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Water Table Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Depth (Inches): _____	
Saturation Present? (Includes Capillary fringe)	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Depth (Inches): _____	

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

Remarks:

APPENDIX B - WETLAND RATING SUMMARY

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland "A" Date of site visit: 2/27/2020

Rated by T. Haderly Trained by Ecology? Yes No Date of training Dec-14

HGM Class used for rating Depressional & Flats Wetland has multiple HGM classes? Yes No

NOTE: Form is not complete with out the figures requested (figures can be combined).

Source of base aerial photo/map Google Earth

OVERALL WETLAND CATEGORY II (based on functions or special characteristics)

1. Category of wetland based on FUNCTIONS

- Category I - Total score = 23 - 27
- X Category II - Total score = 20 - 22
- Category III - Total score = 16 - 19
- Category IV - Total score = 9 - 15

Score for each function based on three ratings
(order of ratings is not important)

9 = H, H, H
8 = H, H, M
7 = H, H, L
7 = H, M, M
6 = H, M, L
6 = M, M, M
5 = H, L, L
5 = M, M, L
4 = M, L, L
3 = L, L, L

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
<i>List appropriate rating (H, M, L)</i>				
Site Potential	M	M	M	
Landscape Potential	M	H	M	
Value	H	H	M	Total
Score Based on Ratings	7	8	6	21

2. Category based on SPECIAL CHARACTERISTICS of wetland

CHARACTERISTIC	Category
Estuarine	
Wetland of High Conservation Value	
Bog	
Mature Forest	
Old Growth Forest	
Coastal Lagoon	
Interdunal	
None of the above	X

Maps and Figures required to answer questions correctly for Western Washington

Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	D 1.3, H 1.1, H 1.4	A3
Hydroperiods	D 1.4, H 1.2	A1
Location of outlet (<i>can be added to map of hydroperiods</i>)	D 1.1, D 4.1	A1
Boundary of area within 150 ft of the wetland (<i>can be added to another figure</i>)	D 2.2, D 5.2	A1
Map of the contributing basin	D 4.3, D 5.3	A6
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	A2
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	A4
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	A5

Riverine Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Ponded depressions	R 1.1	
Boundary of area within 150 ft of the wetland (<i>can be added to another figure</i>)	R 2.4	
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	
Width of unit vs. width of stream (<i>can be added to another figure</i>)	R 4.1	
Map of the contributing basin	R 2.2, R 2.3, R 5.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	R 3.2, R 3.3	

Lake Fringe Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	L 1.1, L 4.1, H 1.1, H 1.4	
Plant cover of trees, shrubs, and herbaceous plants	L 1.2	
Boundary of area within 150 ft of the wetland (<i>can be added to another figure</i>)	L 2.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	L 3.1, L 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	L 3.3	

Slope Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Plant cover of dense trees, shrubs, and herbaceous plants	S 1.3	
Plant cover of dense, rigid trees, shrubs, and herbaceous plants (<i>can be added to another figure</i>)	S 4.1	
Boundary of area within 150 ft of the wetland (<i>can be added to another figure</i>)	S 2.1, S 5.1	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	S 3.3	

HGM Classification of Wetland in Western Washington

For questions 1 -7, the criteria described must apply to the entire unit being rated.
If hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1 - 7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides except during floods?

- NO - go to 2 YES - the wetland class is **Tidal Fringe** - go to 1.1

1.1 Is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?

- NO - Saltwater Tidal Fringe (Estuarine)** **YES - Freshwater Tidal Fringe**
*If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands.
If it is Saltwater Tidal Fringe it is an **Estuarine** wetland and is not scored. This method **cannot** be used to score functions for estuarine wetlands.*

2. The entire wetland unit is flat and precipitation is the only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.

- NO - go to 3 YES - The wetland class is **Flats**
*If your wetland can be classified as a Flats wetland, use the form for **Depressional** wetlands.*

3. Does the entire wetland unit **meet all** of the following criteria?

- The vegetated part of the wetland is on the shores of a body of permanent open water (without any plants on the surface at any time of the year) at least 20 ac (8 ha) in size;
 At least 30% of the open water area is deeper than 6.6 ft (2 m).

- NO - go to 4 YES - The wetland class is **Lake Fringe** (Lacustrine Fringe)

4. Does the entire wetland unit **meet all** of the following criteria?

- The wetland is on a slope (*slope can be very gradual*),
 The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.
 The water leaves the wetland **without being impounded**.

- NO - go to 5 YES - The wetland class is **Slope**

NOTE: Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 ft deep).

5. Does the entire wetland unit **meet all** of the following criteria?

- The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river,
 The overbank flooding occurs at least once every 2 years.

- NO - go to 6 YES - The wetland class is **Riverine**

NOTE: The Riverine unit can contain depressions that are filled with water when the river is not flooding.

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time during the year? *This means that any outlet, if present, is higher than the interior of the wetland.*

- NO - go to 7 YES - The wetland class is **Depressional**

7. Is the entire wetland unit located in a very flat area with no obvious depression and no overbank flooding? The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.

- NO - go to 8 YES - The wetland class is **Depressional**

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a Depressional wetland has a zone of flooding along its sides. **GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide).** Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within the wetland unit being scored.

NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the HGM class listed in column 2 is less than 10% of the unit; classify the wetland using the class that represents more than 90% of the total area.

HGM classes within the wetland unit being rated	HGM class to use in rating
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake Fringe	Lake Fringe
Depressional + Riverine along stream within boundary of depression	Depressional
Depressional + Lake Fringe	Depressional
Riverine + Lake Fringe	Riverine
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE

*If you are still unable to determine which of the above criteria apply to your wetland, or if you have **more than 2 HGM classes** within a wetland boundary, classify the wetland as Depressional for the rating.*

NOTES and FIELD OBSERVATIONS:

DEPRESSIONAL AND FLATS WETLANDS

Water Quality Functions - Indicators that the site functions to improve water quality

D 1.0. Does the site have the potential to improve water quality?		
D 1.1. Characteristics of surface water outflows from the wetland: Wetland is a depression or flat depression (QUESTION 7 on key) with no surface water leaving it (no outlet). points = 3 Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet. points = 2 <input type="checkbox"/> Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 1 <input type="checkbox"/> Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch. points = 1	2	
D 1.2. The soil 2 in below the surface (or duff layer) is true clay or true organic (use NRCS definitions). Yes = 4 No = 0	0	
D 1.3. Characteristics and distribution of persistent plants (Emergent, Scrub-shrub, and/or Forested Cowardin classes): Wetland has persistent, ungrazed, plants > 95% of area points = 5 Wetland has persistent, ungrazed, plants > 1/2 of area points = 3 Wetland has persistent, ungrazed plants > 1/10 of area points = 1 Wetland has persistent, ungrazed plants < 1/10 of area points = 0	5	
D 1.4. Characteristics of seasonal ponding or inundation: <i>This is the area that is ponded for at least 2 months. See description in manual.</i> Area seasonally ponded is > 1/2 total area of wetland points = 4 Area seasonally ponded is > 1/4 total area of wetland points = 2 Area seasonally ponded is < 1/4 total area of wetland points = 0	2	
Total for D 1 Add the points in the boxes above		9

Rating of Site Potential If score is: 12 - 16 = H 6 - 11 = M 0 - 5 = L Record the rating on the first page

D 2.0. Does the landscape have the potential to support the water quality function of the site?		
D 2.1. Does the wetland unit receive stormwater discharges? Yes = 1 No = 0	1	
D 2.2. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants? Yes = 1 No = 0	1	
D 2.3. Are there septic systems within 250 ft of the wetland? Yes = 1 No = 0	0	
D 2.4. Are there other sources of pollutants coming into the wetland that are not listed in questions D 2.1 - D 2.3? Source Yes = 1 No = 0	0	
Total for D 2 Add the points in the boxes above		2

Rating of Landscape Potential If score is: 3 or 4 = H 1 or 2 = M 0 = L Record the rating on the first page

D 3.0. Is the water quality improvement provided by the site valuable to society?		
D 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, lake, or marine water that is on the 303(d) list? Yes = 1 No = 0	1	
D 3.2. Is the wetland in a basin or sub-basin where an aquatic resource is on the 303(d) list? Yes = 1 No = 0	1	
D 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality (answer YES if there is a TMDL for the basin in which the unit is found)? Yes = 2 No = 0	2	
Total for D 3 Add the points in the boxes above		4

Rating of Value If score is: 2 - 4 = H 1 = M 0 = L Record the rating on the first page

DEPRESSIONAL AND FLATS WETLANDS

Hydrologic Functions - Indicators that the site functions to reduce flooding and stream degradation

D 4.0. Does the site have the potential to reduce flooding and erosion?		
D 4.1. Characteristics of surface water outflows from the wetland: Wetland is a depression or flat depression with no surface water leaving it (no outlet) points = 4 Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet points = 2 Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch points = 1 Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 0	2	
D 4.2. Depth of storage during wet periods: <i>Estimate the height of ponding above the bottom of the outlet. For wetlands with no outlet, measure from the surface of permanent water or if dry, the deepest part.</i> Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 7 Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet points = 5 <input checked="" type="checkbox"/> Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet points = 3 <input type="checkbox"/> The wetland is a "headwater" wetland points = 3 Wetland is flat but has small depressions on the surface that trap water points = 1 Marks of ponding less than 0.5 ft (6 in) points = 0	3	
D 4.3. Contribution of the wetland to storage in the watershed: <i>Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.</i> <input type="checkbox"/> The area of the basin is less than 10 times the area of the unit points = 5 <input type="checkbox"/> The area of the basin is 10 to 100 times the area of the unit points = 3 <input type="checkbox"/> The area of the basin is more than 100 times the area of the unit points = 0 <input type="checkbox"/> Entire wetland is in the Flats class points = 5	3	
Total for D 4 Add the points in the boxes above		8

Rating of Site Potential If score is: 12 - 16 = H 6 - 11 = M 0 - 5 = L *Record the rating on the first page*

D 5.0. Does the landscape have the potential to support hydrologic function of the site?		
D 5.1. Does the wetland unit receive stormwater discharges? Yes = 1 No = 0	1	
D 5.2. Is > 10% of the area within 150 ft of the wetland in land uses that generate excess runoff? Yes = 1 No = 0	1	
D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses (residential at >1 residence/ac, urban, commercial, agriculture, etc.)? Yes = 1 No = 0	1	
Total for D 5 Add the points in the boxes above		3

Rating of Landscape Potential If score is: 3 = H 1 or 2 = M 0 = L *Record the rating on the first page*

D 6.0. Are the hydrologic functions provided by the site valuable to society?		
D 6.1. The unit is in a landscape that has flooding problems. Choose the description that best matches conditions around the wetland unit being rated. Do not add points. Choose the highest score if more than one condition is met. The wetland captures surface water that would otherwise flow down-gradient into areas where flooding has damaged human or natural resources (e.g., houses or salmon redds): <ul style="list-style-type: none"> <input type="checkbox"/> Flooding occurs in a sub-basin that is immediately down-gradient of unit. points = 2 <input type="checkbox"/> Surface flooding problems are in a sub-basin farther down-gradient. points = 1 <input type="checkbox"/> Flooding from groundwater is an issue in the sub-basin. points = 1 <input type="checkbox"/> The existing or potential outflow from the wetland is so constrained by human or natural conditions that the water stored by the wetland cannot reach areas that flood. Explain why points = 0 <input checked="" type="checkbox"/> There are no problems with flooding downstream of the wetland. points = 0 	2	
D 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan? Yes = 2 No = 0	0	
Total for D 6 Add the points in the boxes above		2

Rating of Value If score is: 2 - 4 = H 1 = M 0 = L *Record the rating on the first page*

H 1.5. Special habitat features: Check the habitat features that are present in the wetland. <i>The number of checks is the number of points.</i>		
<input checked="" type="checkbox"/> Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long) <input checked="" type="checkbox"/> Standing snags (dbh > 4 in) within the wetland <input type="checkbox"/> Undercut banks are present for at least 6.6 ft (2 m) and/or overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m) <input type="checkbox"/> Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present (<i>cut shrubs or trees that have not yet weathered where wood is exposed</i>) <input checked="" type="checkbox"/> At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated (<i>structures for egg-laying by amphibians</i>) <input type="checkbox"/> Invasive plants cover less than 25% of the wetland area in every stratum of plants (see H 1.1 for list of strata)	3	
Total for H 1	Add the points in the boxes above	9

Rating of Site Potential If Score is: 15 - 18 = H 7 - 14 = M 0 - 6 = L Record the rating on the first page

H 2.0. Does the landscape have the potential to support the habitat function of the site?		
H 2.1 Accessible habitat (include <i>only habitat that directly abuts wetland unit</i>). Calculate: 0 % undisturbed habitat + (_____ 0 % moderate & low intensity land uses / 2) = 0%		
If total accessible habitat is: > 1/3 (33.3%) of 1 km Polygon points = 3 20 - 33% of 1 km Polygon points = 2 10 - 19% of 1 km Polygon points = 1 < 10 % of 1 km Polygon points = 0	0	
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. Calculate: 55 % undisturbed habitat + (_____ 0 % moderate & low intensity land uses / 2) = 55%		
Undisturbed habitat > 50% of Polygon points = 3 Undisturbed habitat 10 - 50% and in 1-3 patches points = 2 Undisturbed habitat 10 - 50% and > 3 patches points = 1 Undisturbed habitat < 10% of 1 km Polygon points = 0	3	
H 2.3 Land use intensity in 1 km Polygon: If > 50% of 1 km Polygon is high intensity land use points = (-2) ≤ 50% of 1km Polygon is high intensity points = 0		
Total for H 2	Add the points in the boxes above	3

Rating of Landscape Potential If Score is: 4 - 6 = H 1 - 3 = M < 1 = L Record the rating on the first page

H 3.0. Is the habitat provided by the site valuable to society?		
H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? Choose only the highest score that applies to the wetland being rated. Site meets ANY of the following criteria: points = 2		
<input type="checkbox"/> It has 3 or more priority habitats within 100 m (see next page) <input type="checkbox"/> It provides habitat for Threatened or Endangered species (any plant or animal on the state or federal lists) <input type="checkbox"/> It is mapped as a location for an individual WDFW priority species <input type="checkbox"/> It is a Wetland of High Conservation Value as determined by the Department of Natural Resources <input type="checkbox"/> It has been categorized as an important habitat site in a local or regional comprehensive plan, in a Shoreline Master Plan, or in a watershed plan	1	
Site has 1 or 2 priority habitats (listed on next page) with in 100m points = 1 Site does not meet any of the criteria above points = 0		

Rating of Value If Score is: 2 = H 1 = M 0 = L Record the rating on the first page

WDFW Priority Habitats

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp.

<http://wdfw.wa.gov/publications/00165/wdfw00165.pdf> or access the list from here:

<http://wdfw.wa.gov/conservation/phs/list/>

Count how many of the following priority habitats are within 330 ft (100 m) of the wetland unit: **NOTE:** This question is independent of the land use between the wetland unit and the priority habitat.

- Aspen Stands:** Pure or mixed stands of aspen greater than 1 ac (0.4 ha).
- Biodiversity Areas and Corridors:** Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report*).
- Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.
- Old-growth/Mature forests:** Old-growth west of Cascade crest – Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) > 32 in (81 cm) dbh or > 200 years of age. Mature forests – Stands with average diameters exceeding 21 in (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west of the Cascade crest.
- Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158 – see web link above*).
- Riparian:** The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.
- Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161 – see web link above*).
- Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.
- Nearshore:** Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report – see web link on previous page*).
- Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.
- Cliffs:** Greater than 25 ft (7.6 m) high and occurring below 5000 ft elevation.
- Talus:** Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft (0.15 - 2.0 m), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.
- Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 20 in (51 cm) in western Washington and are > 6.5 ft (2 m) in height. Priority logs are > 12 in (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list because they are addressed elsewhere.

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type	Category
Check off any criteria that apply to the wetland. List the category when the appropriate criteria are met.	
<p>SC 1.0. Estuarine Wetlands</p> <p>Does the wetland meet the following criteria for Estuarine wetlands?</p> <p><input type="checkbox"/> The dominant water regime is tidal, <input type="checkbox"/> Vegetated, and <input type="checkbox"/> With a salinity greater than 0.5 ppt</p> <p style="text-align: right;"><input type="checkbox"/> Yes - Go to SC 1.1 <input checked="" type="checkbox"/> No = Not an estuarine wetland</p>	
<p>SC 1.1. Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151?</p> <p style="text-align: right;"><input type="checkbox"/> Yes = Category I <input type="checkbox"/> No - Go to SC 1.2</p>	
<p>SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions?</p> <p><input type="checkbox"/> The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. (If non-native species are <i>Spartina</i>, see page 25)</p> <p><input type="checkbox"/> At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland.</p> <p><input type="checkbox"/> The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.</p> <p style="text-align: right;"><input type="checkbox"/> Yes = Category I <input type="checkbox"/> No = Category II</p>	
<p>SC 2.0. Wetlands of High Conservation Value (WHCV)</p> <p>SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value?</p> <p style="text-align: right;"><input type="checkbox"/> Yes - Go to SC 2.2 <input checked="" type="checkbox"/> No - Go to SC 2.3</p> <p>SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value?</p> <p style="text-align: right;"><input type="checkbox"/> Yes = Category I <input type="checkbox"/> No = Not WHCV</p> <p>SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf</p> <p style="text-align: right;"><input type="checkbox"/> Yes - Contact WNHP/WDNR and to SC 2.4 <input checked="" type="checkbox"/> No = Not WHCV</p> <p>SC 2.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website?</p> <p style="text-align: right;"><input type="checkbox"/> Yes = Category I <input type="checkbox"/> No = Not WHCV</p>	
<p>SC 3.0. Bogs</p> <p>Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? <i>Use the key below. If you answer YES you will still need to rate the wetland based on its functions.</i></p> <p>SC 3.1. Does an area within the wetland unit have organic soil horizons, either peats or mucks, that compose 16 in or more of the first 32 in of the soil profile?</p> <p style="text-align: right;"><input type="checkbox"/> Yes - Go to SC 3.3 <input checked="" type="checkbox"/> No - Go to SC 3.2</p> <p>SC 3.2. Does an area within the wetland unit have organic soils, either peats or mucks, that are less than 16 in deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond?</p> <p style="text-align: right;"><input type="checkbox"/> Yes - Go to SC 3.3 <input checked="" type="checkbox"/> No = Is not a bog</p> <p>SC 3.3. Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least a 30% cover of plant species listed in Table 4?</p> <p style="text-align: right;"><input type="checkbox"/> Yes = Is a Category I bog <input type="checkbox"/> No - Go to SC 3.4</p> <p>NOTE: If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in deep. If the pH is less than 5.0 and the plant species in Table 4 are present, the wetland is a bog.</p> <p>SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy?</p> <p style="text-align: right;"><input type="checkbox"/> Yes = Is a Category I bog <input type="checkbox"/> No = Is not a bog</p>	

<p>SC 4.0. Forested Wetlands</p> <p>Does the wetland have at least <u>1 contiguous acre</u> of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as priority habitats? <i>If you answer YES you will still need to rate the wetland based on its functions.</i></p> <p><input type="checkbox"/> Old-growth forests (west of Cascade crest): Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 in (81 cm) or more.</p> <p><input type="checkbox"/> Mature forests (west of the Cascade Crest): Stands where the largest trees are 80-200 years old OR the species that make up the canopy have an average diameter (dbh) exceeding 21 in (53 cm).</p> <p style="text-align: right;"><input type="checkbox"/> Yes = Category I <input checked="" type="checkbox"/> No = Not a forested wetland for this section</p>	
<p>SC 5.0. Wetlands in Coastal Lagoons</p> <p>Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?</p> <p><input type="checkbox"/> The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks</p> <p><input type="checkbox"/> The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon (<i>needs to be measured near the bottom</i>)</p> <p style="text-align: right;"><input type="checkbox"/> Yes - Go to SC 5.1 <input checked="" type="checkbox"/> No = Not a wetland in a coastal lagoon</p> <p>SC 5.1. Does the wetland meet all of the following three conditions?</p> <p><input type="checkbox"/> The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species on p. 100).</p> <p><input type="checkbox"/> At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland.</p> <p><input type="checkbox"/> The wetland is larger than 1/10 ac (4350 ft²)</p> <p style="text-align: right;"><input type="checkbox"/> Yes = Category I <input type="checkbox"/> No = Category II</p>	
<p>SC 6.0. Interdunal Wetlands</p> <p>Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? <i>If you answer yes you will still need to rate the wetland based on its habitat functions.</i></p> <p>In practical terms that means the following geographic areas:</p> <p><input type="checkbox"/> Long Beach Peninsula: Lands west of SR 103</p> <p><input type="checkbox"/> Grayland-Westport: Lands west of SR 105</p> <p><input type="checkbox"/> Ocean Shores-Copalis: Lands west of SR 115 and SR 109</p> <p style="text-align: right;"><input type="checkbox"/> Yes - Go to SC 6.1 <input checked="" type="checkbox"/> No = Not an interdunal wetland for rating</p> <p>SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)?</p> <p style="text-align: right;"><input type="checkbox"/> Yes = Category I <input type="checkbox"/> No - Go to SC 6.2</p> <p>SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger?</p> <p style="text-align: right;"><input type="checkbox"/> Yes = Category II <input type="checkbox"/> No - Go to SC 6.3</p> <p>SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac?</p> <p style="text-align: right;"><input type="checkbox"/> Yes = Category III <input type="checkbox"/> No = Category IV</p>	
<p>Category of wetland based on Special Characteristics</p> <p>If you answered No for all types, enter "Not Applicable" on Summary Form</p>	



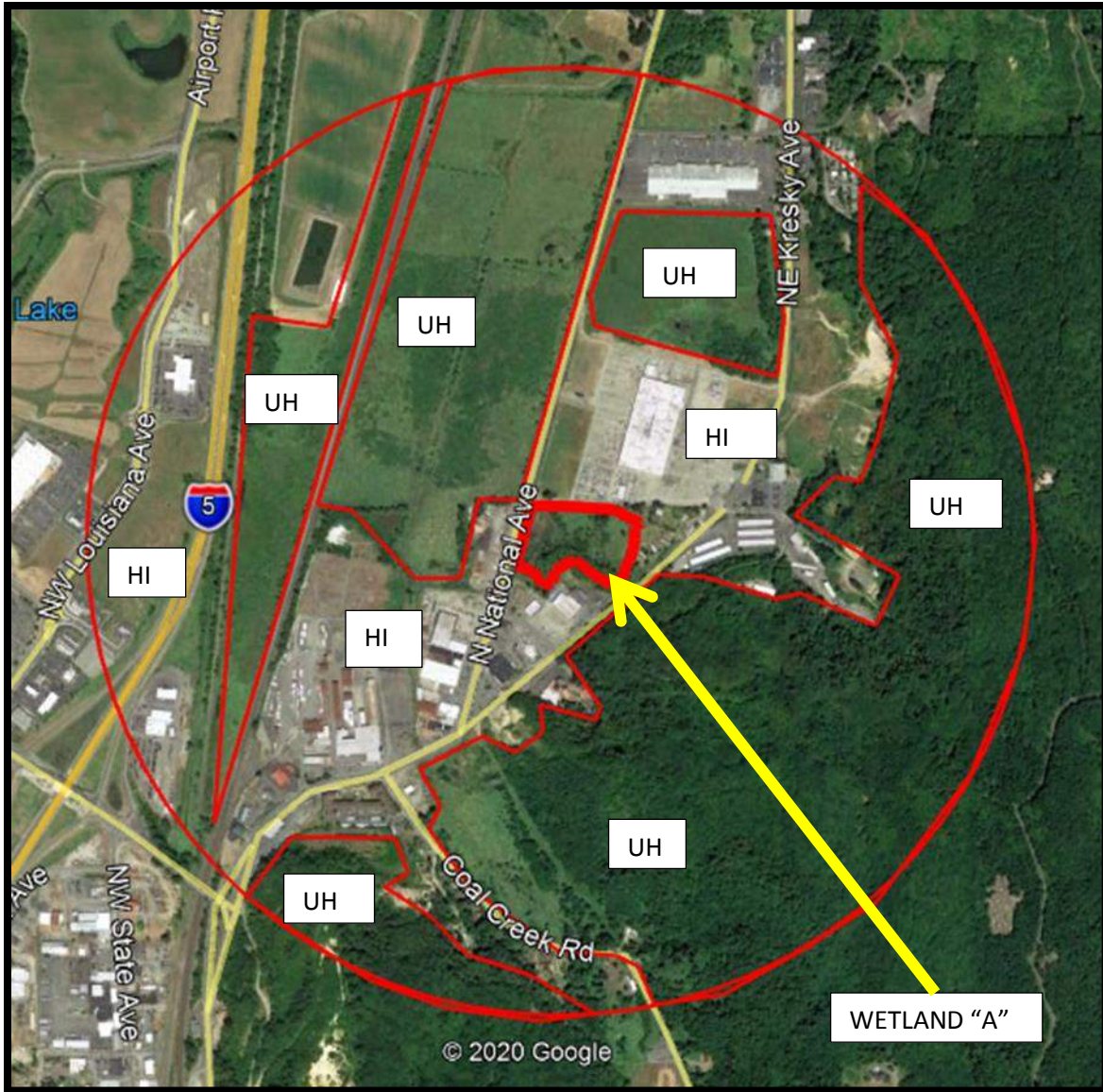
SF = Seasonally Flooded
S = Saturated

150-offset 

Outlet 

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Figure A1
Hydroperiods
Twin Transit Site



Google Earth Pro June 2020

Accessible Habitat

- 0% Undisturbed (AU)
- 0% Moderate & Low Intensity Land Use/2 = (AML)

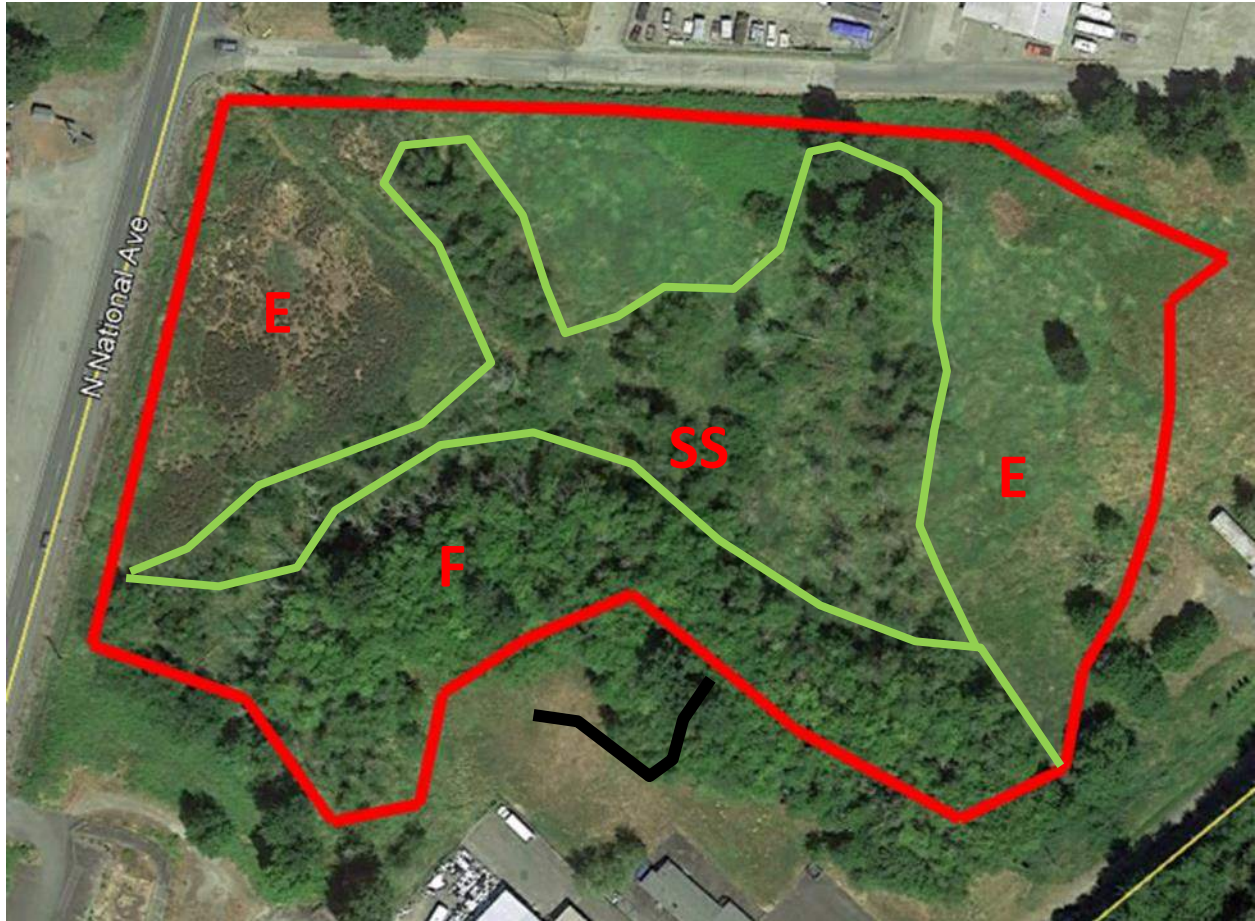
Undisturbed Habitat

- 55% Undisturbed (UH)
- 0% Moderate & Low Intensity Land Use/2 = (UML)

High Intensity = HI (45%)

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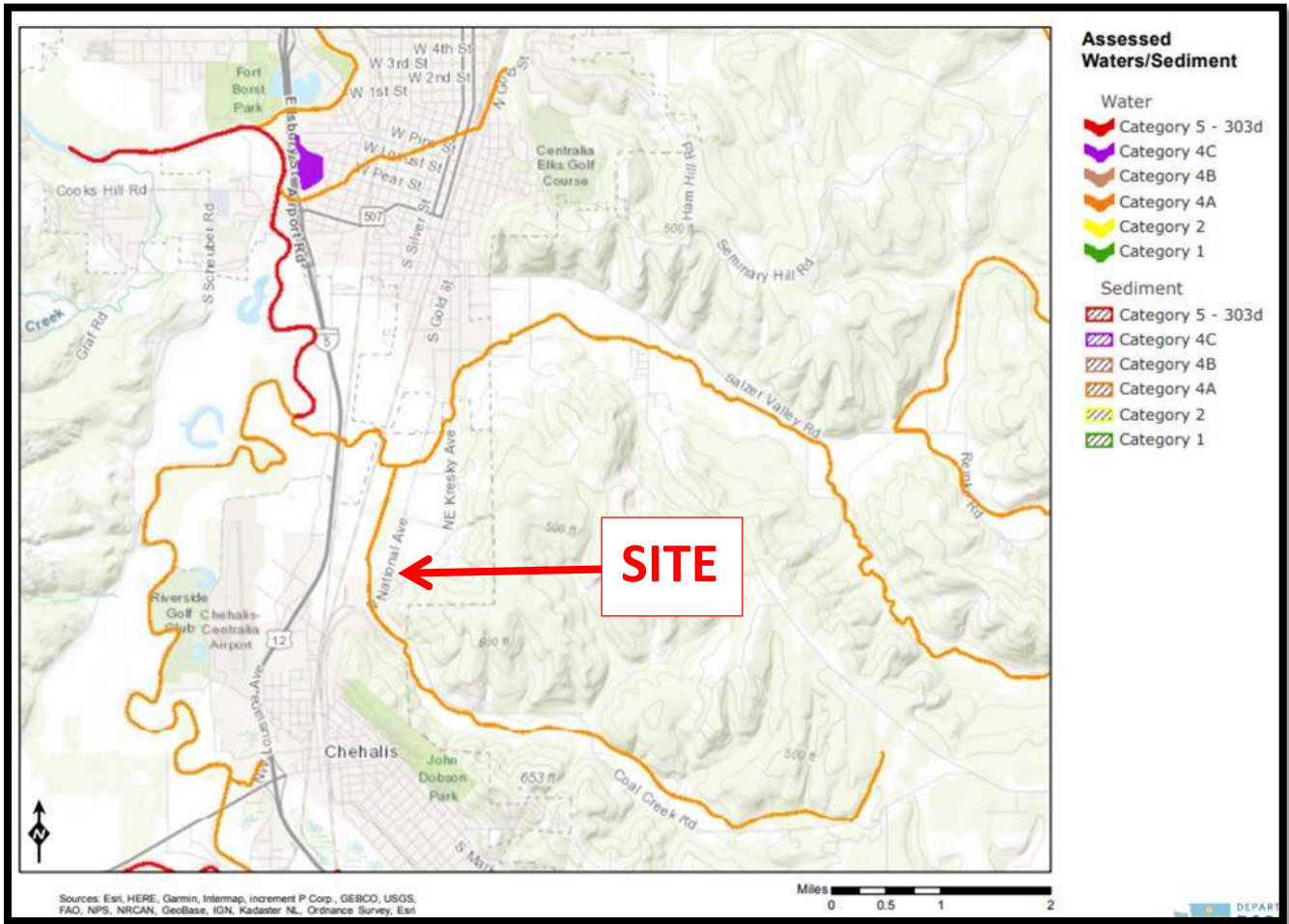
Figure A2
1km Polygon
Twin Transit Site



E = Emergent
F = Forested
SS = Scrub Shrub

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Figure A3
Cowardin Plant Classes
Twin Transit Site



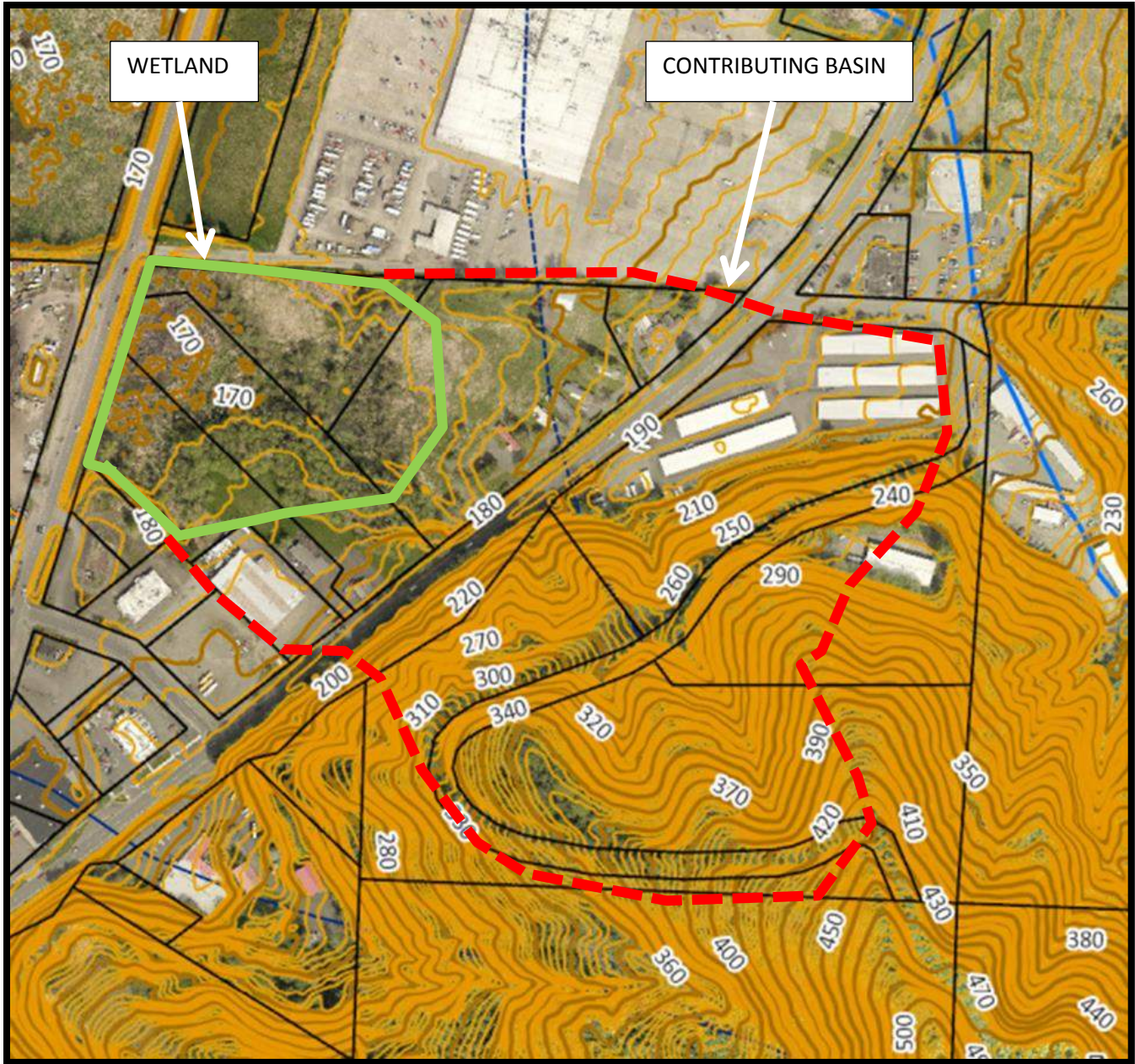
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Figure A4
 303(d) Listed Waters
 Twin Transit Site

Waterbody Name	WRIA	WQ Improvement Project	WQ Atlas Map Link
SALZER CREEK	23 - Upper Chehalis	Upper Chehalis River Bacteria TMDL	6668
SALZER CREEK	23 - Upper Chehalis	Upper Chehalis River Basin Dissolved Oxygen TMDL	7771
SALZER CREEK	23 - Upper Chehalis	Upper Chehalis River Basin Temperature TMDL	7772
SALZER CREEK	23 - Upper Chehalis	Upper Chehalis River Basin Dissolved Oxygen TMDL	7773
SALZER CREEK	23 - Upper Chehalis	Upper Chehalis River Basin Temperature TMDL	35389
SALZER CREEK	23 - Upper Chehalis	Upper Chehalis River Bacteria TMDL	45788
SALZER CREEK	23 - Upper Chehalis	Upper Chehalis River Bacteria TMDL	45789
SALZER CREEK	23 - Upper Chehalis	Upper Chehalis River Basin Dissolved Oxygen TMDL	47749
SALZER CREEK	23 - Upper Chehalis	Upper Chehalis River Basin Dissolved Oxygen TMDL	47758
SALZER CREEK	23 - Upper Chehalis	Upper Chehalis River Bacteria TMDL	10406

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Figure A5
TMDL
Twin Transit Site



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Figure A6
Contributing Basin
Twin Transit Site

APPENDIX C - CLIMATOLOGICAL SUMMARIES

Daily Data | AgWeatherNet at Washington State University

Date	Date	Min°F	Avg°F	Max°F	AvgDP°F	AvgRH%	AvgLWu.	AvgDir°	AvgSpeedmph	MaxGustmph	Avg 2 in. °F	Min°F	Avg°F	AvgSoilVWC%	TotPrecin	TotalSolarRadMJ/m ²	EToi
2020/02/13	13	33.1	38.7	44.1	37.0	93.9	0.08	S	5.4	17.8	41.9	43.5	44.2	42.3	0.12	4.14	0.02
2020/02/14	14	38.0	42.0	47.7	38.1	86.2	0.07	SW	4.2	13.2	42.8	42.6	43.5	44.1	0.14	6.82	0.03
2020/02/15	15	39.1	41.4	43.4	39.5	92.7	0.10	S	7.0	22.8	42.5	43.6	43.9	44.1	0.55	1.26	0.01
2020/02/16	16	33.6	39.4	47.3	36.7	90.6	0.09	SW	4.3	16.0	41.7	42.2	43.2	43.6	0.05	7.75	0.03
2020/02/17	17	30.8	38.4	50.5	33.6	84.7	0.06	SW	3.1	11.4	40.9	41.6	42.9	43.1	0.00	9.49	0.04
2020/02/18	18	30.5	37.0	49.2	31.3	82.5	0.04	N	3.8	16.7	40.5	41.9	42.8	42.8	0.00	9.81	0.04
2020/02/19	19	24.7	36.1	55.7	30.3	83.5	0.00	N	2.0	7.8	39.0	40.6	42.0	42.5	0.00	11.48	0.04
2020/02/20	20	24.5	37.5	58.7	29.4	79.0	0.01	N	2.0	8.2	39.1	40.4	41.9	42.3	0.00	12.22	0.05
2020/02/21	21	27.2	39.8	57.6	32.0	78.2	0.03	SW	2.6	7.8	40.3	40.8	42.4	42.2	0.00	11.92	0.05
2020/02/22	22	31.8	41.8	51.4	37.9	86.6	0.03	S	3.6	11.7	42.0	42.2	43.1	42.1	0.00	6.58	0.03
2020/02/23	23	39.8	43.0	47.4	38.8	85.2	0.05	SW	7.3	26.4	44.0	43.5	44.0	43.7	0.42	7.16	0.04
2020/02/24	24	32.7	41.2	48.3	35.6	81.6	0.02	S	3.2	9.9	43.8	43.4	44.2	43.7	0.00	6.56	0.03
2020/02/25	25	30.1	40.7	52.7	35.8	85.1	0.05	S	2.2	11.4	43.6	42.7	43.9	43.0	0.01	8.64	0.04
2020/02/26	26	35.6	44.7	54.9	40.3	86.0	0.06	NW	2.0	7.8	46.7	44.9	45.7	43.0	0.00	8.40	0.04
2020/02/27	27	31.0	43.3	61.5	37.2	82.4	0.05	SW	2.8	8.9	45.5	44.1	45.8	42.8	0.00	12.99	0.06