

APPENDIX F

WETLANDS AND WATERS OF THE U.S. DELINEATION REPORT (2017)

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Northern Columbia Basin Railroad Project
Port of Moses Lake, Washington
Wetlands and Waters of the U.S. Delineation Report

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Executive Summary

The Port of Moses Lake proposes to construct two new rail line segments, and acquire and refurbish an existing, unused rail segment, to provide rail access to lands designated and zoned for industrial use in the City of Moses Lake, WA and at the Grant County International Airport (GCIA). The entire proposed route would extend approximately 11.5 miles and is known as the Northern Columbia Basin Railroad Project (NCBR project or Project).

The study area for this report is defined as a 200-foot-wide corridor, 100 feet on either side of the proposed track centerline and is limited to one main segment (known as Segment 1) wherein the Project's wetlands occur in the City of Moses Lake. A total of four wetlands regulated by the U.S. Army Corps of Engineers (Corps) and the Washington State Department of Ecology (Ecology) were identified within the study area. Additionally, other jurisdictional waters including Crab Creek and three potential jurisdictional irrigation canals were also within the study area. One wetland was not delineated due to private property access issues.

The delineated wetlands within the study area total 7.68 acres and are rated as Category II and III using the *Washington State Wetland Rating System for Eastern Washington*, Ecology Publication #04-06-30, revised 2014.

Wetlands in the study area are a combination of emergent, scrub-shrub and forested communities, and are located in the western portion of the study area; two of the wetlands are adjacent to Crab Creek. Dominant wetland vegetation consists primarily of Russian olive, Douglas hawthorn, narrowleaf willow, Woods' rose, curly dock, common cattail, common spikerush, reed canarygrass, field horsetail, alsike clover, Baltic rush, spreading bent, reed canarygrass, and common velvetgrass. These wetlands provide moderate to high levels of water quality functions, and low to moderate levels of hydrologic and habitat functions. Vegetated buffers around the wetlands are limited by development and grazing, and are typically dominated by common juniper, Russian olive, sagebrush species, green rabbitbrush, and upland grasses.

A separate biological assessment (BA) will be prepared for the project to address federally-listed threatened or endangered species that may occur in the Project vicinity. This report includes state-listed threatened or endangered species and Washington State Department of Fish and Wildlife (WDFW) priority species and habitat located in the study area.

1. Introduction

The Northern Columbia Basin Railroad Project (NCBR project or Project) proposes to construct two new rail line segments (Segment 1 and Segment 2), and acquire and refurbish an existing rail line (Segment 3), to provide rail access to lands designated and zoned for industrial use along Wheeler Road (Road 3 NE) in the City of Moses Lake and at the Grant County International Airport (GCIA) in Grant County, Washington. The entire proposed route would extend approximately 11.5 miles.

As co-lead agencies, the federal Surface Transportation Board (STB) and the Washington State Department of Transportation (WSDOT) prepared a preliminary Environmental Assessment (EA) in November 2008 and issued a Final EA in May 2009 resulting in an August 2009 decision authorizing the Project and including a finding of no significant impact if the recommended mitigation measures are implemented.

WSDOT completed a Wetlands Discipline Report (WSDOT 2008a) for the Project's EA covering all three rail segments in a study area that consisted of a 600-foot-wide corridor (300 feet on either side of the proposed track centerline). In addition to wetlands, the WSDOT report also identified other waters of the United States (U.S.), including Crab Creek and irrigation canals and ditches. A separate Water Resources Memorandum was also completed for the Project's EA (WSDOT 2008b).

To update data contained in the 2008 WSDOT reports and in the 2009 Final EA, Jacobs' staff conducted field visits in May and June 2017 to identify and assess wetlands and jurisdictional waters in a limited study area confined to the proposed Segment 1 right-of-way (ROW) since no other wetlands or jurisdictional areas occur in the Project's other two segments. This report provides updated wetland delineations (with vegetation, soil, hydrologic, and Ecology rating data) and updated jurisdictional reviews for the currently proposed Segment 1 alignment.

The use of this report is for the following, solely in the Segment 1 rail corridor:

1. Update and delineate wetland boundaries and waters of the U.S. for jurisdictional determination concurrence by regulatory agencies;
2. Provide information to WPE, the Port, and their design team about updates to jurisdictional areas in the study area;
3. Avoid and minimize impacts to wetlands and other jurisdictional waters during the design and construction process; and
4. Provide information to facilitate regulatory permitting and compensatory wetland mitigation planning.

Unavoidable impacts associated with Segment 1 are expected to require permits or authorizations to place fill into jurisdictional areas. Expected permits are:

- Clean Water Act (CWA) Section 404 (Corps)
- CWA Section 401 Water Quality Certification (Ecology)
- CWA Section 402 NPDES Construction Stormwater (Ecology)
- Hydraulic Project Approval (WDFW)

2. Proposed Project

2.1 Location

The Project is located in Grant County, Washington, primarily within the City of Moses Lake, and lies within Water Resource Inventory Area (WRIA) 41-Lower Crab. The legal description for Segment 1 is in portions of Sections 19, 20 and 21, Township 19N, Range 29E; and in portions of Sections 13, 14 and 24, Township 19N, Range 28E; Willamette Meridian.

The approximate latitude/longitude coordinates for the east end of Segment 1 are 47°07'46.50"N, 119°11'54.11"W, and for the west end are 47°08'42.40" N, 119°15'54.32" W (see Appendix A).

2.2 Purpose and Description

The purpose of the Project is to provide rail service to lands designated for industrial development in the northern and eastern parts of the City of Moses Lake, as well as to the east of the Grant County International Airport (GCIA), to enhance opportunities for economic development and to attract new, rail-dependent businesses to those areas. The three components of the project include:

- Segment 1 – Construct a new rail line through designated industrial areas of Moses Lake between the community of Wheeler to the east and Crab Creek to the northwest.
- Segment 2 – Extend an existing track that presently terminates south of the GCIA to the industrial lands located east of the GCIA
- Segment 3 – Improve an existing, unused track between Crab Creek and the GCIA to connect Segments 1 and 2.

3. Methods

Wetlands and other natural habitats within the Segment 1 study area were determined and delineated based on professional field evaluations of vegetation, hydrology, and soils in conjunction with data from the following resources:

- USFWS NWI mapping
- USGS 7.5 minute topographic survey quad mapping
- DNR Natural Heritage Program rare plant datasets (current and historical) as they relate to wetland communities
- USGS StreamStats GIS water-resources planning/drainage analysis data mapping
- FEMA FIRM data
- USDA NRCS Grant County Soil Survey and NRCS Web Soil Survey
- NRCS Hydric Soils List
- Google™ Earth Pro Mapping

Overall, wetlands were identified and delineated using the routine approach described in the 1987 *Corps of Engineers Wetlands Delineation Manual* with the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)*, (Corps 2010). Data plots were sampled that identify the presence/absence of wetland indicators (hydrophytic vegetation, hydric soils, and wetland hydrology).

Data plots for Wetlands A, C and E were collected within the Segment 1 study area. There was no right-of-entry received for the privately-owned parcel containing Wetland B; therefore, data has been estimated for this wetland as also reported previously by WSDOT in 2008. Methods, other information, and data collected in in this 2017 report differ from the 2008 wetland report as follows:

- Jurisdictional waters were not delineated along the portion of Segment 1 that was originally routed southwest to and including Parker Horn (an arm of Moses Lake) due to that portion of the route being replaced with the Alternative 1A rail alignment crossing at Crab Creek.
- No wetland delineations were conducted for Segment 2 or Segment 3 due to the absence of jurisdictional water bodies in those segments.
- The study area and delineation were limited to a 200-foot right-of-way (ROW), 100 feet on either side of the proposed track centerline, along the proposed Segment 1 rail alignment.
- Wetland D, delineated in 2008 west of Crab Creek in Segment 1, no longer exists.
- A new portion of Wetland E was delineated along the western shore of Crab Creek. This area connects to the much larger Wetland E, located to the south along the western shore of Parker Horn, that was delineated in 2008. The larger portion of Wetland E to the south was not delineated in this report since it no longer lies within the current study area/proposed rail alignment.

- Wetland F, located along the eastern shore of Parker Horn, is outside of the current study area/ rail alignment and was not delineated.

The “50/20 Rule” was used to define prevalence of hydrophytic vegetation and plant species dominance. Vegetation is considered hydrophytic (adapted to wet conditions) when over 50% of the dominant plant cover, plus 20% or more of species-specific plant cover, has a wetland indicator status of facultative (FAC), facultative wetland (FACW), or obligate (OBL) (Corps 2010). When all three parameters occur (i.e., hydrophytic vegetation, hydric soil, and wetland hydrology), the presence of a Corps-regulated wetland is confirmed.

Wetland functions/values were assessed for delineated wetlands using the *Ecology Washington State Rating System for Eastern Washington* (Hruby 2014). This rating system is function-based and differentiates wetlands based on their sensitivity to disturbance, their significance, their rarity, the ability to replace them, and the functions they provide.

Boundaries of jurisdictional areas within the Segment 1 study area were delineated by sequentially numbered flags and surveyed with a Trimble GeoExplorer 6000 hand-held device. Acreages within the ROW were then calculated using computer-aided design and drafting (CADD) based on the site-specific survey information. Their locations and features are described in Chapter 4 and are shown on the reference maps in Appendix A, and on maps that accompany the wetland delineation and rating forms in Appendix C.

4. Existing Conditions

4.1 Landscape Setting

The project study area is within WRIA 41 - Lower Crab that includes the portion of Crab Creek from Ephrata, WA south to the Columbia River. Crab Creek is a small, perennial creek flowing through the arid and semi-arid Columbia Plateau to Moses Lake, within the Channeled Scablands of east-central Washington. The Scablands are a complex of channels, rock basins, broad coarse-grained alluvial deposits, and loess islands created by a series of cataclysmic Pleistocene floods that scoured prominent pathways into the base geology of the Columbia River Basalt Group.

Moses Lake is approximately 20 miles in total length and 11 square miles in area, with a mean depth of 18.5 feet. The lake lies in topographically low channels incised into the southern extent of the Ephrata Fan. It has three major arms: Rocky Ford Arm (main arm) located to the northwest, and Parker Horn and Pelican Horn located to the northeast, separated by an area known as the Lower Peninsula. Two main surface tributaries drain to the lake--Rocky Ford Creek to the main arm, and Crab Creek to Parker Horn.

Crab Creek drains approximately 84 percent of the Moses Lake watershed, including major irrigation return flows from the Rocky Coulee Wasteway that enters the creek approximately 1.5 miles north of the Parker Horn arm of Moses Lake. Moses Lake flows south to Potholes Reservoir where several springs renew Crab Creek, which then flows west-southwest approximately 30 miles to the Columbia River.

Hydrology in Segment 1 is primarily from Crab Creek and natural springs in topographically low areas in the western portion of the study area, and from irrigation canals and ditches maintained by the Columbia Basin Project (CBP) in the eastern portion of the study area. Most of the irrigation canals and ditches drain to Moses Lake. Segment 1 would cross the mouth of Crab Creek approximately 1,000 feet north of the State Route 17 bridge over Parker Horn.

Topography in the project area is generally flat, with elevations ranging from 1,050 feet to 1,240 feet above sea level. Soils are coarse-grained and permeable. Annual average precipitation is 7.69 inches and is commonly associated with summer thunderstorms and winter rains and snowfall. Snowfall depths rarely exceed 8 to 15 inches and occur from December through February. Average temperatures range from a low of 23 °F in January to a high of 88 °F in July.

The economy of the project area is dominated by agriculture. Large-scale conversion of land to cropland began in the late 1800s and expanded when irrigation became widespread after damming of the Columbia River in the 1930s (National Research Council 1995). The CBP irrigation network dramatically changed the appearance and ecology of the project area from mostly shrub-steppe to a large system of reservoirs, canals, wasteways, and irrigated farmland. The CBP irrigates 671,000 acres of land in east central Washington. Crops in the project area include cereal grains, alfalfa, wheat, corn, potatoes, various tree fruits and many different seed crops, with a scattering of vineyards and pulp farms. Outside of the CBP, dry-land wheat farming and cattle grazing dominate.

Wetland and upland plant communities reflect the area's semi-arid climate. Habitats that have not been converted to irrigated farmland are typically shrub-steppe, consisting of one or more layers of perennial grass with a discontinuous overstory layer of shrubs. In the Crab Creek sub-basin, shrub-steppe also includes 'meadow steppe' and 'steppe' habitats which may have a relatively low frequency of shrubs. A complete plant list is located in Appendix B.

Land uses adjacent to the study area include urban and industrial development, riparian areas associated with Crab Creek, cropland, and grazed pastureland.

4.2 Wetlands

4.2.1 Overview

A summary of the Segment 1 wetlands is displayed in Table 1.

Table 1. Summary of Wetlands in the Study Area

Wetland ¹	Cowardin ²	NWI ⁵	HGM	Ecology Rating ³	Approximate Wetland Size (acres)	Wetland Area within ROW/Study Area (acres)
A	PEM, PSS	PEM1C	Depressional	III	12.0+ ac ⁶	6.73 ac
B	PEM	N/A ⁷	Depressional	N/A	1ac ⁴	N/A ⁴
C	PEM, PSS	PEM1C	Riverine	II	3.2+ ac ⁶	0.86 ac
E	PEM, PSS	N/A ⁷	Riverine	II	0.62+ ac ⁶	0.09 ac

1. Wetland D no longer exists.

2. Cowardin et al. (1979) Class based on vegetation: PEM = Palustrine Emergent; PSS = Palustrine Scrub-shrub; PFO = Palustrine Forest.

3. Ecology Washington State Rating System for Eastern Washington (Hruby, 2014)

4. Wetland B was not delineated; no right-of-entry to property; information is estimated based on observation.

5. National Wetland Inventory (NWI) Class based on vegetation: PEM1C - Palustrine, Emergent, Persistent, Seasonally Flooded

6. Wetland extends beyond the study area

7. Not on the NWI maps as being a wetland area

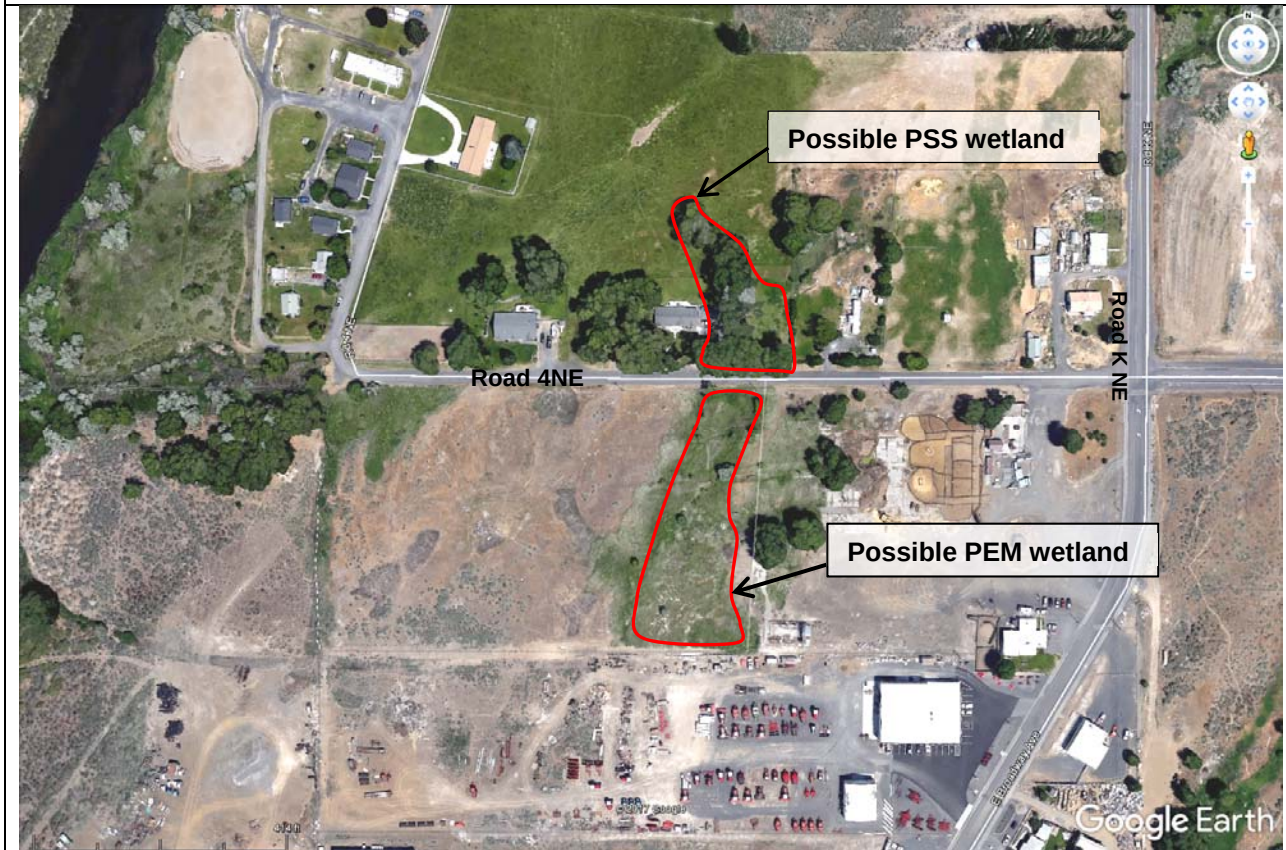
Information summaries for Wetlands A, B, C, and E are displayed on the following pages. The Corps wetland determination data forms and Ecology wetland rating forms are included in Appendix C.

WETLAND A – INFORMATION SUMMARY					
Location: S13, T19N, R28W; south of Road 4 NE and east of Road K NE on actively-grazed private property.					
					
From the northwest portion of Wetland A looking notheast to Wetland A and Road 4NE.		From the southern delineated portion of Wetland A looking north to Wetland A.			
WRIA	WRIA 41 -Lower Crab Watershed				
Eastern WA Ecology Rating	III				
Wetland Size	12.0+ ac (wetland extends outside study area)				
Wetland Size Within Study Area	6.73 ac				
Cowardin Classification(s)	PEM, PSS				
HGM Classification	Depressional				
Wetland Data Sheets	Data Plots - A1, A3, A5, A7, A9, and A11				
Upland Data Sheets	Data Plots A2, A4, A6, A8, A10, and A12				
Dominant Vegetation	Russian olive, aslike clover, Baltic rush, spreading bent, reed canarygrass, and common velvetgrass.				
Soils	(91) Prosser very fine sandy loam, 5 to 10 percent slopes, (94) Prosser-Starbuck very fine sandy loams, 0 to 15 percent slopes, and (182) Wiehl fine sandy loam, 2 to 5 percent slopes				
Hydrology	Springs in a topographically low area				
Wetland Functions Summary					
Function ¹ <i>Circle the appropriate ratings</i>	Improving Water Quality		Hydrologic	Habitat	TOTAL
Site Potential	H	M ☐ L ☒	H ☒ M ☐ L ☐	H ☐ M ☐ L ☒	
Landscape Potential	☒ H ☐ M ☐ L ☐	☒ H ☐ M ☐ L ☐	H ☐ M ☐ L ☒		
Value	H ☐ ☒ M ☐ L ☐	H ☐ M ☐ L ☒	H ☒ ☐ M ☐ L ☐		
Score Based on Ratings	6		6	4	16

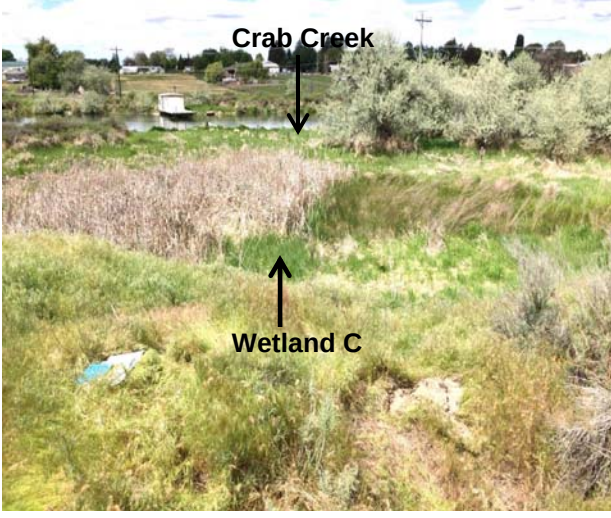
1. “H” means that the function present is of high quality or has the potential to benefit the ecosystem; “M” means that the function present is of lower quality or has limited connection to the ecosystem; and “L” means the function present is of low quality or absent.

WETLAND B – INFORMATION SUMMARY

Location: S14, T19N, R28E; south of Road 4 NE and west of Road K NE on private property. Observed from Road 4NE because right-of-entry was not obtained for this wetland area.



WRIA	WRIA 41 -Lower Crab Watershed
Eastern WA Ecology Rating	N/A
Wetland Size	2 ac (estimated; wetland was not delineated due to right-of-entry issues)
Wetland Size Within Study Area	N/A
Cowardin Classifications	PEM / PSS
HGM Classification	Depressional
Wetland Data Sheets	N/A
Upland Data Sheets	N/A
Dominant Vegetation	N/A
Soils	(91) Prosser very fine sandy loam, 5 to 10 percent slopes,
Hydrology	N/A

WETLAND C – INFORMATION SUMMARY				
Location: S14 and S11, T19N, R28E; west of Road 4NE and on the east side of Crab Creek.				
				
From the west-central portion of Wetland C, looking north to Wetland C and Crab Creek.		From upland area above and east of Wetland C, looking west to Wetland C and Crab Creek in the background.		
WRIA	WRIA 41 -Lower Crab Watershed			
Eastern WA Ecology Rating	II			
Wetland Size	3.2+ ac (wetland extends outside study area)			
Wetland Size Within Study Area	0.86 ac			
Cowardin Classifications	PEM, PSS			
HGM Classification	Riverine			
Wetland Data Sheets	C1 and C3			
Upland Data Sheets	C2 and C4			
Dominant Vegetation	Russian olive, Douglas hawthorn, curly dock, narrowleaf willow, common cattail, common spikerush, reed canarygrass, field horsetail			
Soils	(68) Kittitas silt loam, (91) Prosser very fine sandy loam, 5 to 10 percent slopes, and (141) Starbuck very fine sandy loam, 0 to 15 percent slopes			
Hydrology	Crab Creek, topographically low area			
Wetland Functions Summary				
Function ¹ <i>Circle the appropriate ratings</i>	Improving Water Quality	Hydrologic	Habitat	TOTAL
Site Potential	H ☒ M L	☒ M L	H ☒ L	
Landscape Potential	☒ M L	H M ☒	H ☒ L	
Value	H ☒ L	H ☒ L	☒ M L	
Score Based on Ratings	7	6	7	20

1. “H” means that the function present is of high quality or has the potential to benefit the ecosystem; “M” means that the function present is of lower quality or has limited connection to the ecosystem; and “L” means the function present is of low quality or absent.

WETLAND E – INFORMATION SUMMARY				
Location: S14 and S11, T19N, R28E; east of Kinder Road NE, and on the west side of Crab Creek.				
				
From the southwestern edge of the delineated portion of Wetland E looking east to Wetland E and Crab Creek.		From the west-central edge of the delineated portion of riparianWetland E looking northeast to the Wetland E and Crab Creek.		
WRIA	WRIA 41 - Lower Crab			
Eastern WA Ecology Rating	II			
Wetland Size	0.62+ ac (wetland extends outside study area)			
Wetland Size Within Study Area	0.09 ac			
Cowardin Classifications	PSS			
HGM Classification	Riverine			
Wetland Data Sheets	E2			
Upland Data Sheets	E1, E3, U1			
Dominant Vegetation	Russian olive, narrowleaf willow, common juniper, reed canarygrass			
Soils	(68) Kittitas silt loam			
Hydrology	Crab Creek, topographically low area			
Wetland Functions Summary				
Function ¹ <i>Circle the appropriate ratings</i>	Improving Water Quality	Hydrologic	Habitat	TOTAL
Site Potential	☒ H M L	H ☒ M L	H ☒ M L	
Landscape Potential	☒ H M L	H M ☒ L	H ☒ M L	
Value	H ☒ M L	H ☒ M L	☒ H M L	
Score Based on Ratings	8	5	7	
				20

1. “H” means that the function present is of high quality or has the potential to benefit the ecosystem; “M” means that the function present is of lower quality or has limited connection to the ecosystem; and “L” means the function present is of low quality or absent.

Table 2. Wetland Summary by Classification

Classification System	Class	Area Within ROW/Study Area (acre)	Percent of Total Wetland Class Within ROW/Study Area
USFWS (Cowardin et al., 1979)	PEM/PSS	7.59	99
	PSS	0.09	1
	Total	7.68	100
Ecology – E WA (Hruby, 2014)	I	0	0
	II	0.95	12
	III	6.73	88
	IV	0	0
	Total	7.68	100
Hydrogeomorphic (HGM)	Slope	0	0
	Depressional	6.73	88
	Riverine	0.95	12
	Total	7.68	100

Soils

Two levels of information were used to define the soils in the study area: preliminary research using the published data in the Grant County Soil Survey obtained from the Web Soil Survey (NRCS 2017), and site-specific soil evaluations at the wetland field data points. The Web Soil Survey mapped 16 soil series in the study area (see Appendix A), with only one soil series (68 - Kittitas silt loam) listed as hydric. The soils noted below are generally listed from east to west along the Segment 1 study area:

- **73** -Malaga gravelly sandy loam, 0 to 5 percent slopes consists of very deep, somewhat excessively drained soils that formed in glacial outwash on terraces.
- **40** - Ephrata fine sandy loam, 0 to 2 percent slopes consists of very deep, well drained soils that formed in glacial outwash mixed with loess in the upper part on outwash plains and terraces.

- **41** - Ephrata fine sandy loam, 2 to 5 percent slopes – see the above description for 40 - Ephrata fine sandy loam, 0 to 2 percent slopes.
- **141** - Starbuck very fine sandy loam, 0 to 15 percent slopes consists of shallow, well drained soils formed in loess, colluvium, residuum and alluvium over basalt on benches, hillsides, and ridgetops
- **68** - Kittitas silt loam consists of deep, somewhat poorly drained soils that formed in alluvium. Kittitas soils are on alluvial plains or flood plains
- **91** - Prosser very fine sandy loams, 5 to 10 percent slopes consists of soils with moderately deep, well drained soils that formed mainly in loess and glaciofluvial sediments over basalt with a minor component of volcanic ash on hillslopes, benches, and plateaus
- **94** - Prosser-Starbuck very fine sandy loams, 0 to 15 percent slopes consists of Prosser soils with moderately deep, well drained soils that formed mainly in loess and glaciofluvial sediments over basalt with a minor component of volcanic ash on hillslopes, benches, and plateaus; and Starbuck soils described above in the 141 - Starbuck very fine sandy loam, 0 to 15 percent slopes soils description.
- **182** - Wiehl fine sandy loam, 2 to 5 percent slopes consists of moderately deep, well drained soils that formed in eolian deposits and glaciofluvial sediments over semiconsolidated siltstone, sandstone, and shale.
- **77** - Malaga stony sandy loam, 0 to 15 percent slopes – see description above for 73 -Malaga gravelly sandy loam, 0 to 5 percent slopes.
- **44** - Ephrata gravelly sandy loam, 2 to 5 percent slopes - see description above for 73 -Malaga gravelly sandy loam, 0 to 5 percent slopes.
- **41** - Ephrata fine sandy loam, 2 to 5 percent slopes – see description for 73 -Malaga gravelly sandy loam, 0 to 5 percent slopes.
- **40** - Ephrata fine sandy loam, 0 to 2 percent slopes – see description for 73 -Malaga gravelly sandy loam, 0 to 5 percent slopes.
- **88** – Pits consists of open pits from which soil material and underlying basalt, gravel, or semiconsolidated lacustrine sediment have been removed. Areas of Pits support little if any vegetation. This unit is used mainly as a source of road fill for use in surfacing roads, and sand and gravel for use in concrete.
- **115** - Royal very fine sandy loam, 0 to 2 percent slopes consists of very deep, well drained soils formed in sandy alluvium and wind modified glaciofluvial sediments on footslopes and terraces
- **152** - Taunton fine sandy loam, 0 to 2 percent slopes consists of moderately deep to duripan, well drained soils formed in alluvium. Taunton soils are on terraces and basalt plains, fan terraces, and mesas
- **132** - Scoon silt loam, 0 to 5 percent slopes consists of shallow to a duripan, well drained soils formed in loess and silty alluvium over a duripan. Scoon soils are on terraces and alluvial fans

Soil profiles examined during the field survey that displayed non-hydric soil profiles consisted of the following matrix color and/or redoximorphic features:

- dark brown (10YR 3/3), grayish yellow brown (10YR 4/2), dull yellowish brown (10YR 4/3), brown (10YR 4/4), and dull yellowish brown (10YR 5/4); and lacking redox features,
- very dark grayish brown (10YR 3/2) and lacking redox features,

- brown (10YR 4/3) and lacking redox features,
- dull yellowish brown (10YR 4/3) with yellowish (10YR 5/6) mottles,
- dark brown (10YR 3/3) with dark yellowish brown (10YR 3/6) mottles,
- light gray (10YR 7/1) and lacking redox features,
- light gray (2.5Y 7/1) and lacking redox features,
- grayish yellow brown (10YR 4/2) with brown (10YR 4/4) mottles below 10 inches

Soil profiles that displayed hydric soils consisted primarily of the following matrix color and/or redoximorphic features:

- grayish yellow brown (10YR 4/2) with yellowish brown (10YR 4/6) mottles,
- grayish yellow brown (10YR 4/2) with dark yellowish brown (10YR 3/6) mottles,
- grayish yellow brown (10YR 4/2) with brown (10YR 4/4) mottles
- grayish yellow brown (10YR 4/2) with yellowish brown (10YR 5/6) mottles,
- brownish gray (10YR 5/1) with yellowish brown (10YR 4/6) mottles,
- brownish black (10YR 3/2) with yellowish brown (10YR 5/6) mottles,
- gray (5Y 4/1) with yellowish brown (10YR 4/6) mottles

Vegetation

Wetlands in the study area are a combination of emergent, scrub-shrub and forested communities. Russian olive and reed canarygrass are dominant in all the wetlands. Other dominant wetland vegetation includes Douglas hawthorn, narrowleaf willow, Woods' rose, curly dock, common cattail, common spikerush, field horsetail aslike clover, Baltic rush, spreading bent, and common velvetgrass.

Many of the species occurring in the study area are non-native, are equally adapted to wetlands and uplands, and have a Facultative (FAC) indicator status (Reed 1988). Many species occur as dominants in both upland and wetland delineation sample plots; a complete plant list is located in Appendix B.

Hydrology

Wetlands within the study area are primarily associated with Crab Creek/Parker Horn. Wetlands C and E are adjacent to Crab Creek. When Moses Lake levels are high, wetlands along Crab Creek receive occasional flooding and exchange nutrients with the creek, creating a backwater effect in Crab Creek. Study area wetlands outside of Crab Creek/Parker Horn are associated with spring flow and groundwater discharge resulting from landscape-wide irrigation practices.

4.2.2 Wetland Buffers

Vegetated buffers around Wetland A are limited by cattle grazing, and buffers around Wetlands C and E adjacent to Crab Creek are limited by development. Buffers are typically dominated by common juniper, Russian olive, sagebrush species, green rabbitbrush, reed canarygrass and upland grasses. Russian olive and reed canarygrass are listed as noxious species by the Washington State Noxious Weed Control Board.

Wetland buffer width is determined by the wetland's rating and location. All study area wetlands are

located within the City of Moses Lake. Wetlands and buffers located within 200 feet of the ordinary high water mark (OHWM) of lakes and streams, including the upland boundary of any wetlands that are partially located within 200 feet of the OHWM, are regulated under the city's Shoreline Master Program (SMP) (City of Moses Lake 2017). Wetlands and buffers outside of the shoreline management area are regulated under the city's Critical Areas Ordinance (CAO) (City of Moses Lake 2003). Therefore, Wetlands C and E along Crab Creek are regulated under the SMP, and Wetlands A and B are regulated under the CAO.

Table 3. Wetland Buffer Widths - City of Moses Lake

Wetland	Category	SMP or CAO Regulations	Buffer Width (feet)
A	III	CAO ³	25'
B*	N/A	CAO ³	N/A
C	II	SMP ^{1,2}	120' (Standard is 75' + 45' due to 7-point habitat score)
D	II	SMP ^{1,2}	120' (Standard is 75' + 45' due to 7-point habitat score)

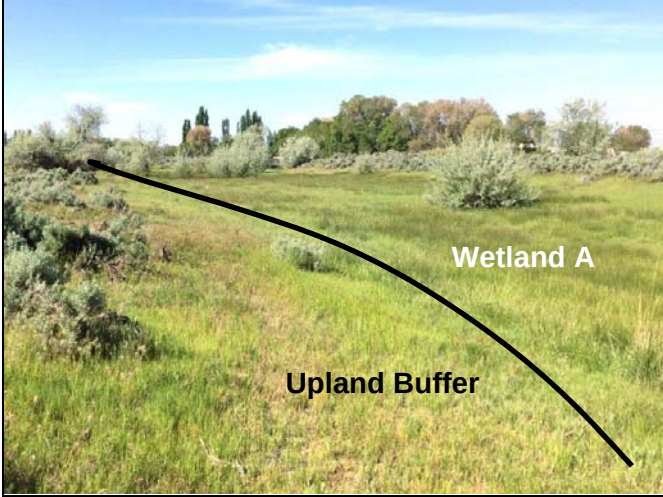
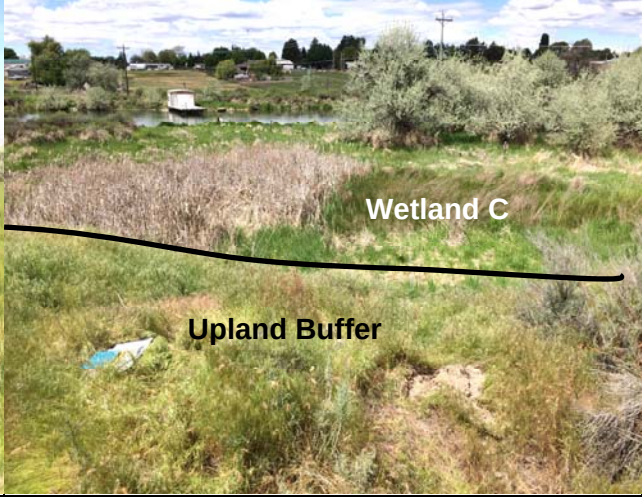
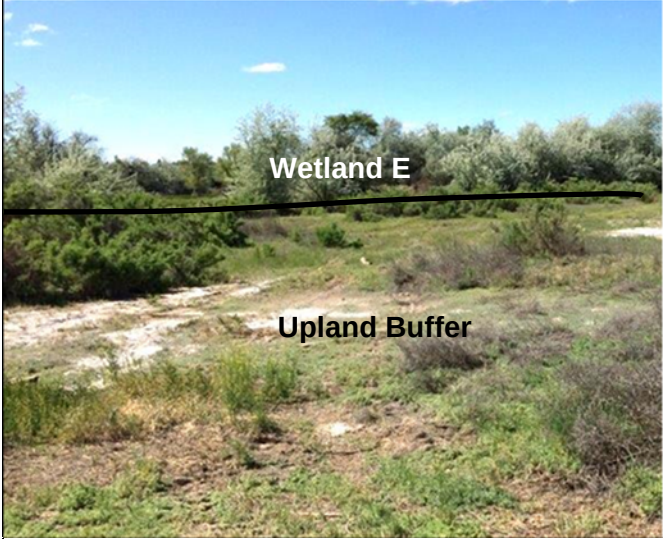
* Not delineated or scored; no right-of-entry to property

1. SMP standard buffer widths assume that the buffer is vegetated with a native plant community appropriate for the ecoregion. If the existing buffer is unvegetated, sparsely vegetated, or vegetated with invasive species that do not perform the needed functions, the buffer shall either be planted to create the appropriate plant community, or the buffer shall be widened to ensure that adequate functions of the buffer are provided.

2. SMP standard buffers have been reduced by 25%, contingent on implementation of the mitigation measures in SMP Table 6.1. If an applicant chooses not to apply the mitigation measures in SMP Table 6.1, then the width of the buffer must be increased to the original width by dividing by 75%. For example, a 75' standard buffer with the mitigation measures would be a 100' standard buffer without the mitigation measures. SMP Table 6.1 mitigation ratios for Category II wetlands are as follows: 3:1 for creation or re-establishment; 6:1 for rehabilitation; 12:1 for enhancement.

3. CAO buffers shall consist of an undisturbed area of existing native and non-native vegetation. The buffer width may be reduced if the site demonstrates that the adjacent land is, and will remain, densely vegetated, and that the intensity of the proposed land use for the development site does not contribute to a "net loss". However, at no time can the minimum buffer be less than 50% of the noted width.

Figure 1. Photos of Typical Existing Wetland Buffers

Typical Existing Wetland A Buffer	Typical Existing Wetland C Buffer
	
From upland area southwest of Wetland A, looking northeast to the upland buffer and the interior of Wetland A.	From upland area southeast of Wetland C, looking northwest to upland buffer, Wetland C and Crab Creek.
Typical Existing Wetland E Buffer	
	
From upland area west of Wetland E, looking southeast to the upland buffer of Wetland E.	

4.2.3 Wetland Functions and Values

This rating system is designed to differentiate among wetlands based on their sensitivity to disturbance, rarity, the functions they provide, and whether they can be replaced or not. The emphasis is on identifying those wetlands:

- where the ability to replace them is low,
- that are sensitive to adjacent disturbance,
- that are rare in the landscape,
- that perform many functions well, and
- that are important in maintaining biodiversity

The depressional wetland (Wetland A) provides moderate levels of water quality and hydrologic functions and low habitat functions, and the riverine wetlands (Wetlands C and E) provide moderate to high levels of water quality functions and moderate levels of hydrologic and habitat functions.

Wetland A was determined to be a Category III wetland. Category III wetlands are wetlands with a moderate level of functions (scores between 16-18 points) and can often be adequately replaced with a well-planned mitigation project. Category III wetlands usually have been disturbed in some way and are often less diverse or more isolated from other natural resources in the landscape than Category II wetlands.

Wetlands C and E were determined to be Category II wetlands. Category II wetlands are difficult, though not impossible to replace, and provide high levels of some functions. These wetlands occur more commonly than Category I wetlands, but still need a relatively high level of protection. A summary of the wetland functions is displayed in Table 4 (Hruby 2014).

Table 4. Functions and Values of the Delineated Wetlands

Function/Value ¹	Wetland					
	A		C		E	
Water Quality Functions	Score		Score		Score	
Site Potential	L	6	M	7	H	8
Landscape Potential	H		H		H	
Value	M		M		M	
Hydrologic Functions						
Site Potential	H	6	H	6	M	5
Landscape Potential	H		L		L	
Value	L		M		M	
Habitat Functions						
Site Potential	L	4	M	7	M	7
Landscape Potential	L		M		M	
Value	M		H		H	
Total Score	16		20		20	
Ecology Wetland Rating	III		II		II	

1. “H” means that the function present is of high quality or has the potential to benefit the ecosystem; “M” means that the function present is of lower quality or has limited connection to the ecosystem; and “L” means the function present is of low quality or absent.

4.3 Waters of the U.S.

4.3.1. Crab Creek

The Crab Creek watershed encompasses approximately 2,040 square miles. The creek's headwaters are in Lincoln County, Washington near the town of Reardan, approximately 19 miles west of the City of Spokane, including a small part of western Spokane County. Crab Creek flows southwest for approximately 140 miles draining into the Columbia River near the town of Schwana in Grant County. It is one of the few perennial streams in the Columbia Basin.

Much of the Crab Creek flow goes underground during the summer. Prior to the beginning of the CBP, Crab Creek surface flow was negligible except during periods of heavy winter/spring runoff. Crab Creek currently has two flow regimes--winter and summer. Flow in Crab Creek is highly variable (unpredictable) from January through April, and relatively stable (predictable) from May through December. Large winter/spring runoffs (>500 cfs) have occurred during 40% of the last 40 years, with four large events occurring in successive years in the late 1990s (Northwest Area Committee 2015). There was no winter/spring runoff event in 2000-2001, and the 2000-2001 water year flow was the lowest since 1977. Since 1960, the mean annual flow has been 44.5 cfs. Crab Creek typically does not flood, but can occasionally exceed channel capacity near the proposed Segment 1 crossing.

The Rocky Coulee Wasteway is an engineered canal that enters Crab Creek upstream of Moses Lake approximately one mile north of Segment 1. The wasteway primarily carries releases from the East Low Canal with some intermittent natural runoff from Rocky Coulee.

The reach of Crab Creek at the proposed Segment 1 crossing is on the Ecology 303(d) list for pH and temperature. Primary fish species include lake whitefish, rainbow trout, brown trout, Lahontan cutthroat trout, brown bullhead, walleye, largemouth bass, smallmouth bass, bluegill, black crappie and yellow perch (City of Moses Lake 2005).

CRAB CREEK INFORMATION SUMMARY		
	Stream Name	Crab Creek
	WRIA	41 - Lower Crab
	WA Stream Catalog #	17020015
	Local Jurisdiction	Moses Lake
	DNR Stream Type	Type S
	Riparian Buffer Width	20 – 100 feet
	Documented Fish Use redband rainbow trout, walleye, largemouth bass, smallmouth bass	
Location of Stream Relative to Project Corridor	Segment 1 would cross Crab Creek approximately 1,000 feet north of the State Route 17 bridge over Parker Horn (arm of Moses Lake).	
Connectivity (where stream flows from/to)	Headwaters are near Reardan, WA in Lincoln County; flows southwest for approximately 140 miles draining into the Columbia River near the town of Schwana, WA in Grant County.	
Riparian/Buffer Conditions	Dominant plant species in the riparian community include reed canarygrass, bentgrass, Russian olive, common juniper, willows, rose species, hawthorn, and serviceberry. Shading of Crab Creek is limited by the sparse condition of Russian olive and low-growing junipers. Vegetated buffer adjacent to the riparian area is limited by development and is dominated by common juniper, Russian olive, sagebrush species, green rabbitbrush, reed canarygrass and upland grasses. Russian olive and reed canarygrass are listed as noxious species by the Washington State Noxious Weed Control Board.	

4.3.2 Irrigation Canals

Three independent irrigation districts hold a contract with the United States Bureau of Reclamation (BOR) to operate and maintain a portion of the CBP. The water source for the districts starts at Grand Coulee Dam located in north central Washington, which feeds into the CBP Main Canal. The Main Canal flows over 45 miles to the Main Canal Bifurcation, located approximately 6 miles west and south of Long Lake, Washington. At this point the Main Canal splits into the East Low Canal and the West Canal. The East Low Canal serves the East and South Columbia Basin Irrigation Districts (Columbia Basin Development League 2017). The Segment 1 study area lies within Irrigation Block 41 of the East Columbia Basin Irrigation District. The canals contain water from March until October.

Irrigation canals/ditches observed in the study area that may be jurisdictional are listed below, are described sequentially from east to west, and are identified on the Wetland Survey reference map in Appendix A.

- **Rocky Coulee Diversion Drain Canal 180+182 (RCD 180+182)**
Earthen canal approximately six feet wide and five feet deep, constructed between 1946 and 1951.



- **East Low Canal 20U1 (EL 20U1)**
Earthen canal approximately two feet wide and three feet deep.



■ **East Low Canal Lateral 20 (EL 20)**

Earthen canal approximately 10 to 12 feet wide and four feet deep that runs through a cast concrete culvert under Wheeler Road. It was constructed in 1950 and is estimated to be 10-11 miles long. This is the largest of the irrigation canals within the study area.



4.4 Sensitive Plants, Fish, and Wildlife

A separate Biological Assessment will be prepared to address federally-listed threatened or endangered species that may occur in the Project vicinity.

Regarding state-listed threatened or endangered species, the project site contains potential habitat for the northern leopard frog, a state endangered species. The northern leopard frog requires a mosaic of habitats to meet the requirements of all of its life stages and breeds in a variety of aquatic habitats that include slow-moving or still water along streams and rivers, wetlands, permanent or temporary pools, beaver ponds, and human-constructed habitats such as earthen stock tanks and borrow pits. Subadult northern leopard frogs typically migrate to feeding sites along the borders of larger, more permanent bodies of water and recently-metamorphosed frogs will move up and down drainages and across land in an effort to locate new breeding areas (USFWS 2011). Recent surveys confirm that the only remaining population of northern leopard frogs in the State of Washington is at Potholes Reservoir (WDFW 2013). Within the study area, habitat for northern leopard frogs would be limited to the Parker Horn/Crab Creek vicinity.

WDFW priority habitat and species (PHS) maps also identify the following state candidate species and priority habitats occurring within the Segment 1 study area:

- Burrowing owls (candidate species) and their breeding areas are mapped immediately east of the RCD 181+182 and EL 20 canals in the eastern portion of the study area; however, no burrowing owls were observed during Jacobs' fieldwork.
- Washington ground squirrels (candidate species) are mapped near EL 20 in the eastern portion of the study area; however, no ground squirrels were observed during Jacobs' fieldwork.
- Waterfowl and shorebird concentrations are mapped in the western portion of the study area at Parker Horn/Crab Creek.
- A rainbow trout migratory corridor is mapped in the western portion of the study area in Parker Horn/Crab Creek.

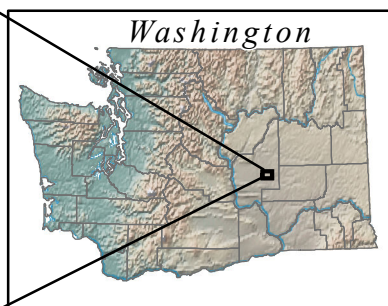
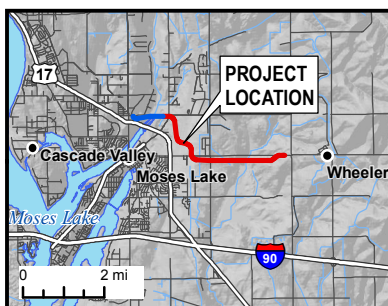
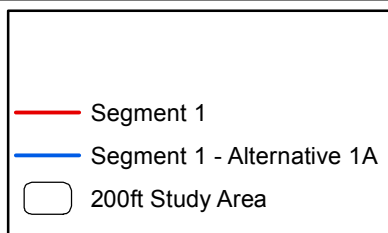
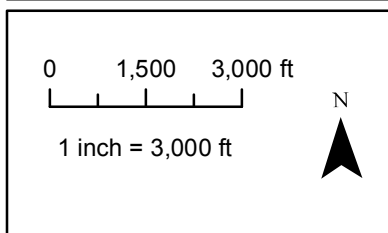
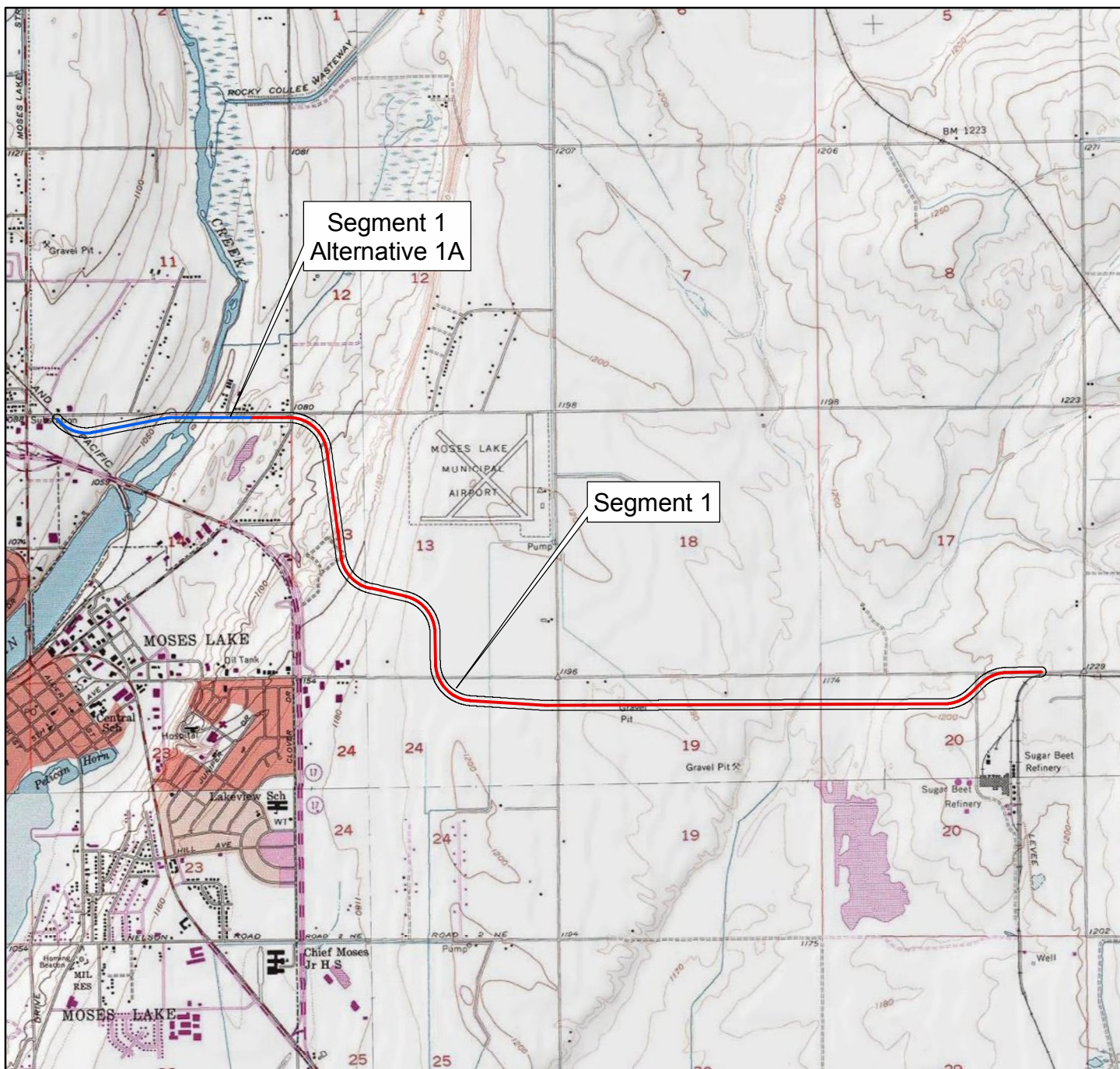
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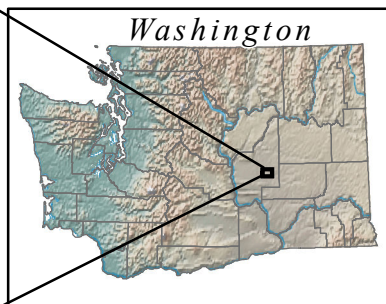
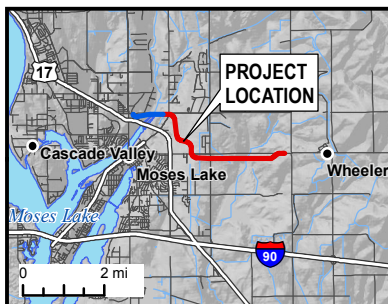
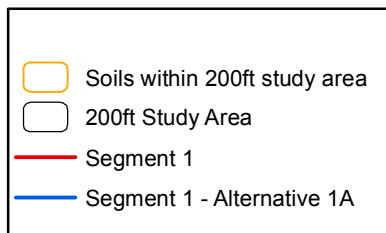
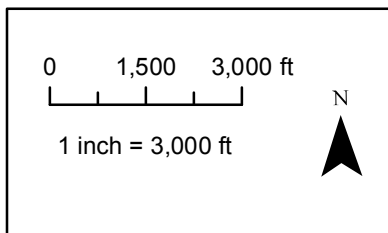
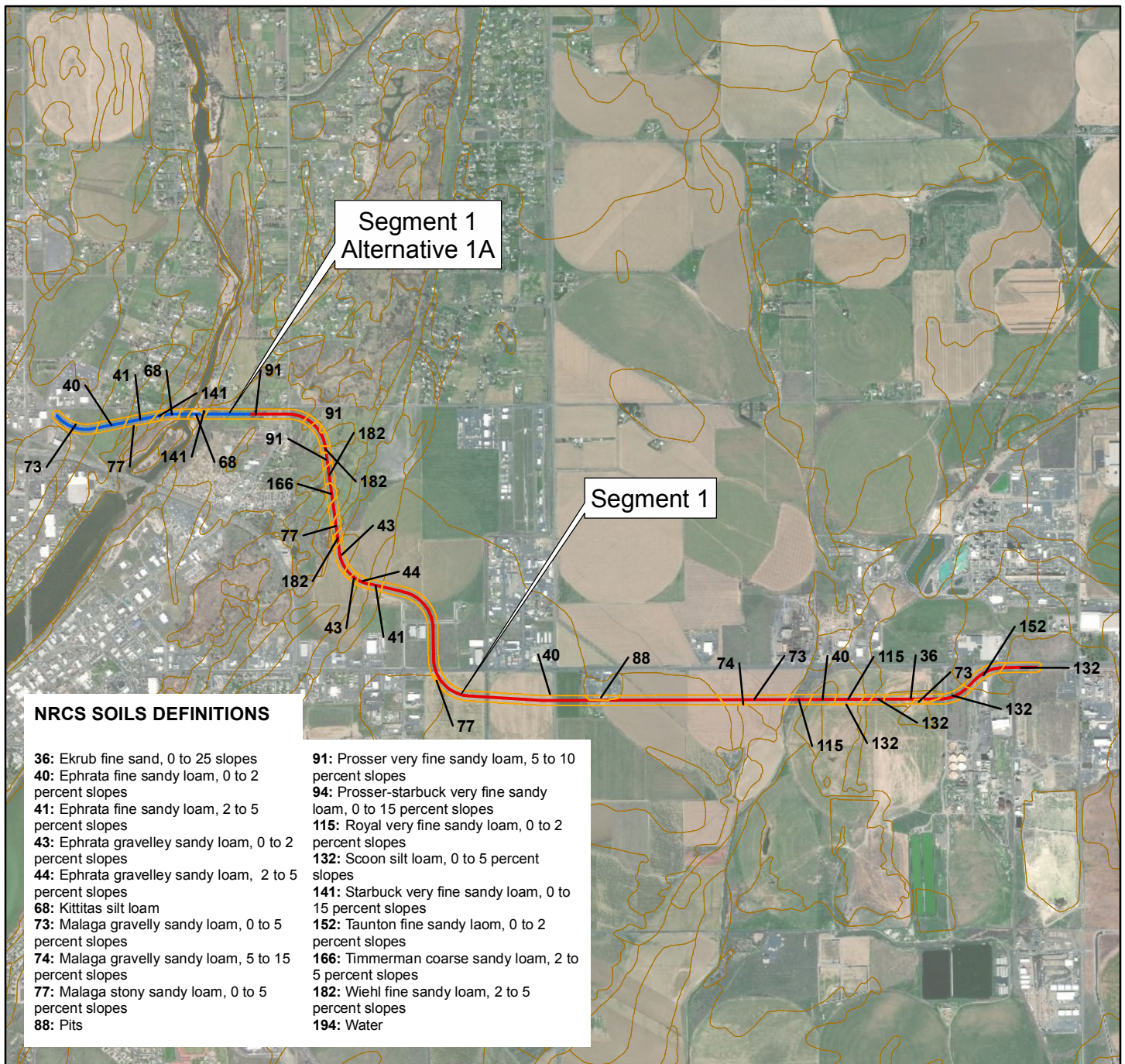
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Appendix A. Reference Maps

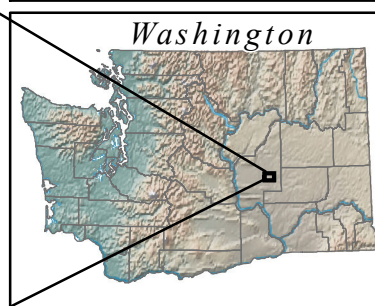
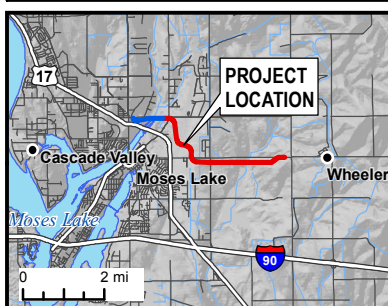
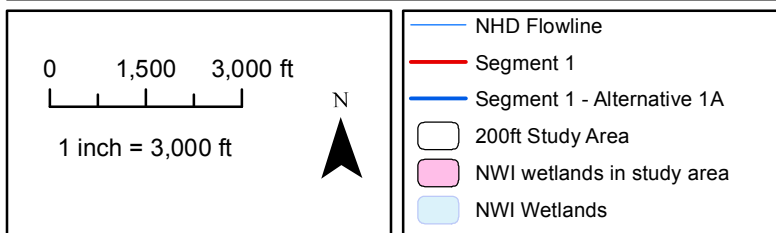
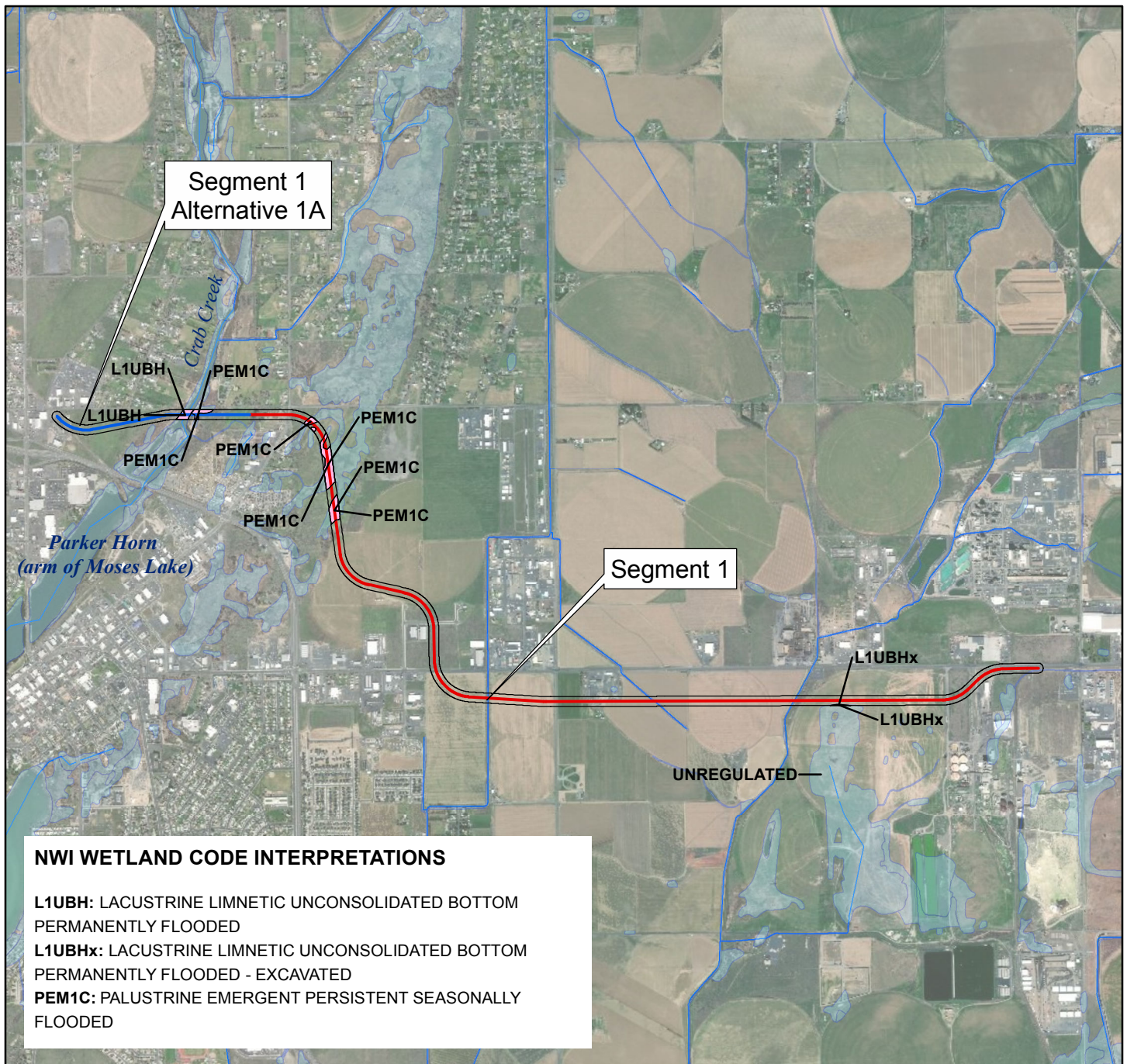
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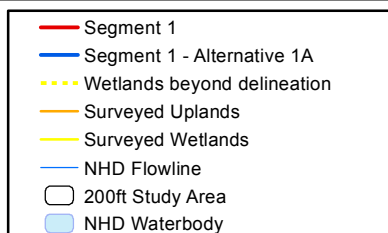
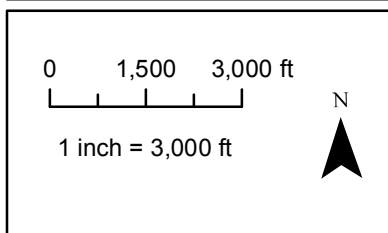
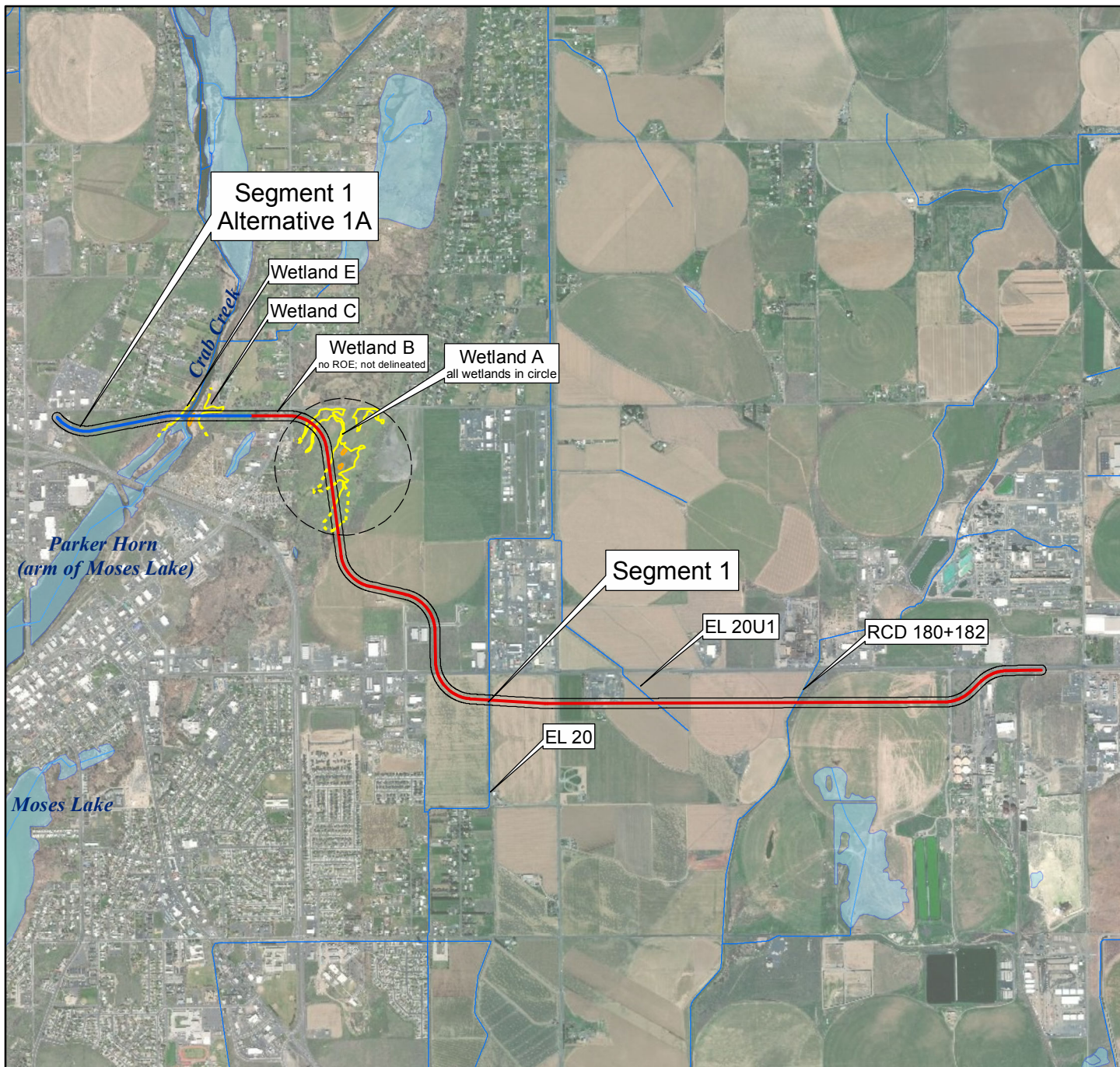
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LAT/LONG (WEST END): 47°08'42.40" N, 119°15'54.32" W	
COUNTY: GRANT	
STATE: WASHINGTON	
DATE: JUNE 2019	
DATA SOURCES: United States Geological Survey (topography, NHD data), Natural Earth (state map)	
MAP PRODUCED BY: Jacobs Environmental Group	
CARTOGRAPHER: Ian David Crickmore	



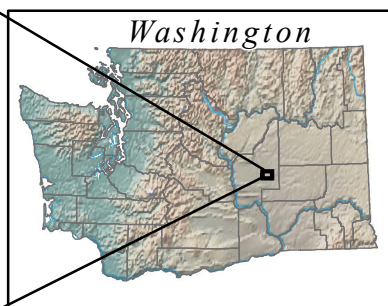
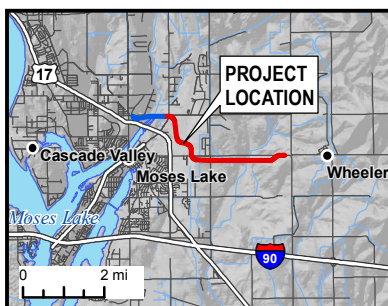
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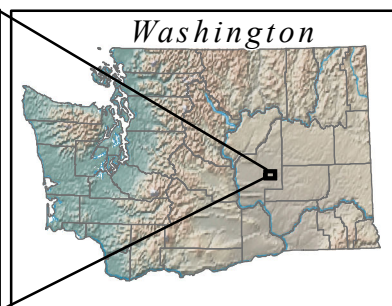
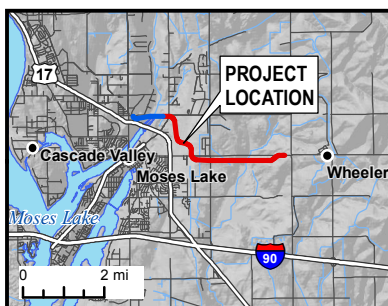
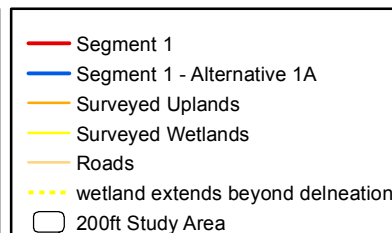
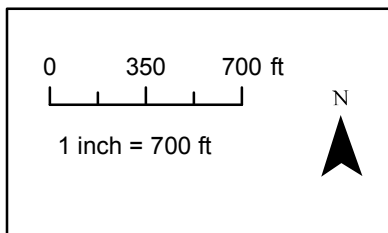
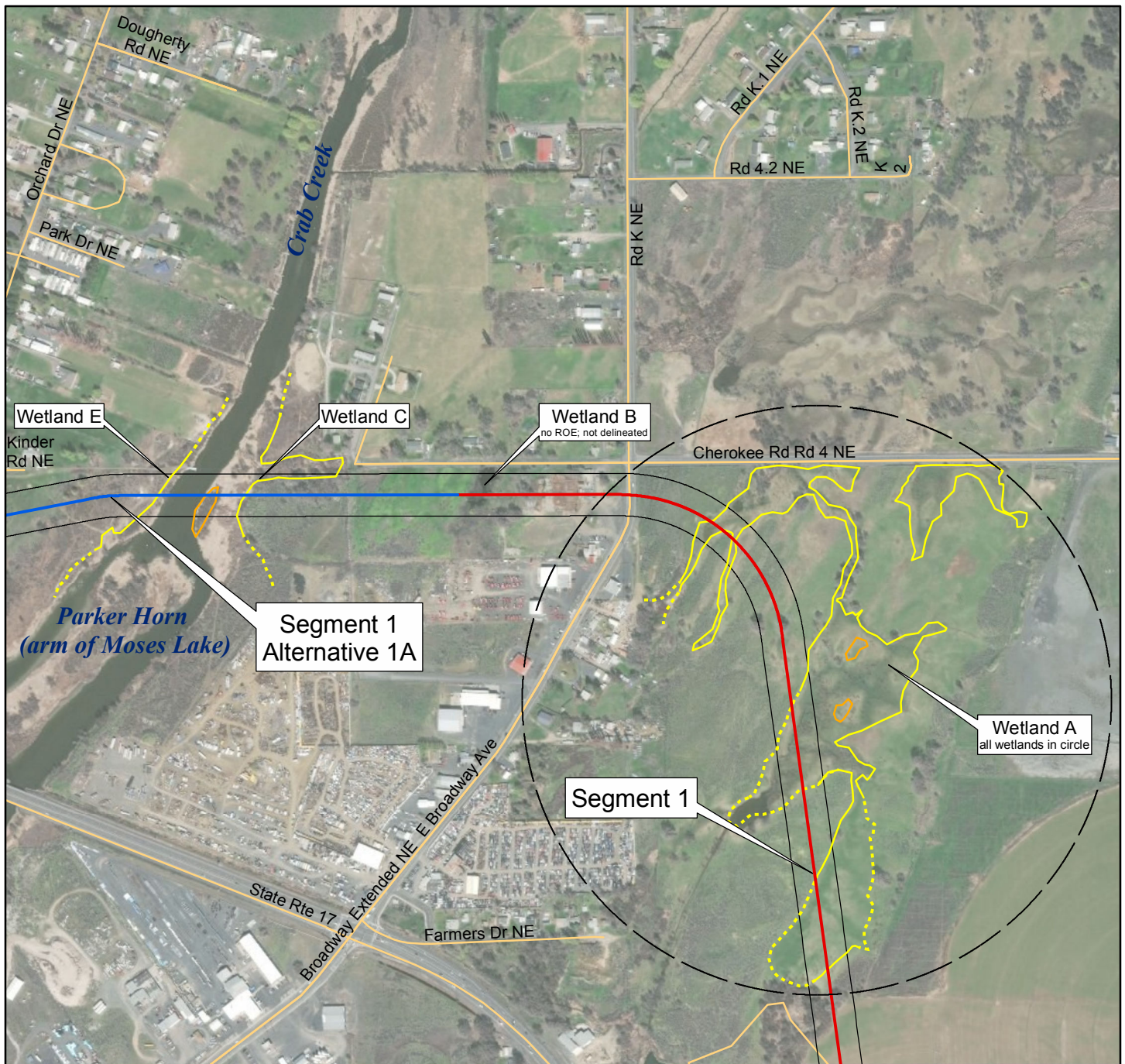


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LEGAL:	IN PORTIONS OF SECTIONS 19, 20 AND 21, TOWNSHIP 19N, RANGE 29E; AND IN PORTIONS OF SECTIONS 13, 14 AND 24, TOWNSHIP 19N, RANGE 28E; WILLAMETTE MERIDIAN
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COUNTY:	GRANT
STATE:	WASHINGTON
DATE:	JUNE 2019
DATA SOURCES: United States Geological Survey (topography, NHD data), Natural Earth (state map), U.S. Fish and Wildlife (NWI wetlands) MAP PRODUCED BY: Jacobs Environmental Group CARTOGRAPHER: Ian David Crickmore	



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WATERWAY:	CRAB CREEK
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COUNTY:	GRANT
STATE:	WASHINGTON
DATE:	JUNE 2019
DATA SOURCES: United States Geological Survey (topography, NHD data), Natural Earth (state map), Jacobs (surveyed wetlands) MAP PRODUCED BY: Jacobs Environmental Group CARTOGRAPHER: Ian David Crickmore	





WETLAND SURVEY	
USACE REF. NO.:	
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MAP PRODUCED BY: Jacobs Environmental Group	
CARTOGRAPHER: Ian David Crickmore	

Appendix B. Existing Plant Species

Scientific Name	Common Name	Arid West Wetland Indicator Status
Trees		
<i>Elaeagnus angustifolia</i>	Russian olive	FAC
<i>Salix amygdaloides</i>	Peachleaf willow	FACW
<i>Salix sepulcralis</i>	Weeping willow	FACW
<i>Ulmus parvifolia</i>	Chinese elm	UPL
Shrubs		
<i>Amelanchier alnifolia</i>	Serviceberry	FACU
<i>Artemisia campestris</i>	Pacific wormwood	UPL
<i>Artemisia ludoviciana</i>	White sagebrush	FACU
<i>Artemisia rigida</i>	Scabland sagebrush	UPL
<i>Artemisia tridentata</i>	Big sagebrush	UPL
<i>Atriplex tridentata</i>	Basin saltbush	FACW
<i>Atriplex truncata</i>	Wedgeleaf orache	FACU
<i>Betula occidentalis</i>	Water birch	FACW
<i>Crataegus douglasii</i>	Douglas hawthorn	FAC
<i>Chrysothamnus viscidiflorus</i>	Green rabbit-brush	NI - UPL
<i>Juniperus communis</i>	Common juniper	FACU
<i>Rosa woodsia</i>	Woods' rose	FACU
<i>Salix amygdaloides</i>	Peachleaf willow	FACW
<i>Salix exigua</i>	Narrowleaf willow	FACW
Herbs		
<i>Acroptilon repens</i>	Russian knapweed	NI - UPL
<i>Agrostis stolonifera</i>	Spreading bent	FACW
<i>Alopecurus arundinaceus</i>	Creeping meadow foxtail	FAC
<i>Bromus tectorum</i>	Cheat grass	UPL
<i>Capsella bursa-pastoris</i>	Shepherd's-Purse	FACU
<i>Cardaria draba</i>	Hoary cress	NI
<i>Cardaria pubescens</i>	Hairy whitetop	FACU
<i>Carex praegracilis</i>	Clustered field sedge	FACW
<i>Chenopodium album</i>	Lamb's-quarters	FACU
<i>Cirsium arvense</i>	Canadian thistle	FACU
<i>Cirsium vulgare</i>	Bull thistle	FACU
<i>Conyza Canadensis</i>	Horseweed	FACU
<i>Cynodon dactylon</i>	Bermuda grass	FACU
<i>Dichanthelium Acuminatum</i>	Tapered rosette grass (panicgrass)	FAC
<i>Distichlis spicata</i>	Salt grass	FAC
<i>Eleocharis palustris</i>	Common spikerush	OBL
<i>Elymus repens</i>	Quackgrass	FAC

<i>Equisetum arvense</i>	Field horsetail	FAC
<i>Festuca idahoensis</i>	Bluebunch fescue	FACU
<i>Holcus lanatus</i>	Common velvetgrass	FAC
<i>Hordeum jubatum</i>	Foxtail barley	FAC
<i>Juncus acuminatus</i>	Tapertip rush	OBL
<i>Juncus balticus</i>	Baltic rush	FACW
<i>Juncus nevadensis</i>	Sierra rush	FACW
<i>Kochia scoparia</i>	Mexican fireweed	FAC
<i>Lemna</i> spp.	Duckweed spp.	OBL
<i>Lepidium appelianum</i>	Globe-pod pepperwort	UPL
<i>Lepidium draba</i>	Hoary cress	UPL
<i>lepidium latifolium</i>	Broadleaved pepperweed	FAC
<i>Lolium perenne</i>	Perennial rye grass	FAC
<i>Persicaria maculosa</i>	Spotted lady's-thumb	FACW
<i>Phalaris arundinacea</i>	Reed canarygrass	FACW
<i>Potamogeton pectinatus</i>	Sago pondweed	OBL
<i>Poa segunda</i>	Curly bluegrass	FACU
<i>Polygonum persicaria</i>	Spotted ladysthumb	FACW
<i>Polypogon monspeliensis</i>	Annual rabbit's-foot grass	FACW
<i>Pseudoroegneria spicata</i>	Bluebunch wheatgrass	UPL
<i>Rumex crispus</i>	Curly dock	FAC
<i>Sarcobatus vermiculatus</i>	Greasewood	FACU
<i>Schedonorus arundinaceus</i>	Tall fescue	FACU
<i>Scirpus nevadensis</i>	Nevada bulrush	OBL
<i>Scirpus validus</i>	Softstem bulrush	OBL
<i>Sisymbrium</i> spp.	Tumble mustard	FACU
<i>Solanum dulcamara</i>	Climbing nightshade	FAC
<i>Taraxacum officinale</i>	Common dandelion	FACU
<i>Thlaspi arvense</i>	Field pennycress	UPL
<i>Tragopogon dubius</i>	Yellow salsify	NI
<i>Trifolium hybridum</i>	Alsike Clover	FAC
<i>Trifolium repens</i>	White clover	FACU
<i>Typha latifolia</i>	Common cattail	OBL

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Appendix C. Wetland Delineation and Rating Forms

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RATING SUMMARY – Eastern Washington

Name of wetland (or ID #): Wetland A Date of site visit: 5/17/2017

Rated by Sue Platte Trained by Ecology? ☒ Yes ☐ No Date of training 5/9/2017

HGM Class used for rating Depressional 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 Pro

OVERALL WETLAND CATEGORY III (based on functions ☐ or special characteristics ☐)

1. Category of wetland based on FUNCTIONS

 Category I - Total score = 22 - 27
 Category II - Total score = 19 - 21
 X **Category III** - Total score = 16 - 18
 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	L	M	L	
Landscape Potential	H	H	L	
Value	M	L	M	Total
Score Based on Ratings	6	6	4	16

2. Category based on SPECIAL CHARACTERISTICS of wetland

CHARACTERISTIC	Category
Vernal Pools	
Alkali	
Wetland of High Conservation Value	
Bog and Calcareous Fens	
Old Growth or Mature Forest - slow growing	
Aspen Forest	
Old Growth or Mature Forest - fast growing	
Floodplain forest	
None of the above	X

Maps and Figures required to answer questions correctly for Eastern Washington

Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes and classes of emergents	D 1.3, H 1.1, H 1.5	
Hydroperiods (including area of open water for H 1.3)	D 1.4, H 1.2, H 1.3	
Location of outlet (<i>can be added to map of hydroperiods</i>)	D 1.1, D 4.1	
Boundary of area within 150 ft of the wetland (<i>can be added to another figure</i>)	D 2.2, D 5.2	
Map of the contributing basin	D 5.3	
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)	D 3.1, D 3.2	
Screen capture of list of TMDLs for WRIA in which wetland is found (website)	D 3.3	

Riverine Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes and classes of emergents	H 1.1, H 1.5	
Hydroperiods	H 1.2, H 1.3	
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	
Map of the contributing basin	R 2.2, R 2.3, R 5.2	
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	
Width of wetland vs. width of stream (<i>can be added to another figure</i>)	R 4.1	
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)	R 3.1	
Screen capture of list of TMDLs for WRIA in which wetland is found (website)	R 3.2, R 3.3	

Lake Fringe Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes and classes of emergents	L 1.1, L 4.1, H 1.1, H 1.5	
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 wetland is found (website)	L 3.3	

Slope Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes and classes of emergents	H 1.1, H 1.5	
Hydroperiods	H 1.2, H 1.3	
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 figure above</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 wetland is found (website)	S 3.3	

HGM Classification of Wetland in Eastern Washington

For questions 1 - 4, the criteria described must apply to the entire unit being rated.

If the 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 - 4 apply, and go to Question 5.

1. Does the entire unit **meet both** of the following criteria?

- ☐ The vegetated part of the wetland is on the water side of the Ordinary High Water Mark of a body of permanent open water (without any plants on the surface) that is at least 20 ac (8 ha) in size
- ☐ At least 30% of the open water area is deeper than 10 ft (3 m)

☒ NO - go to 2

☐ YES - The wetland class is **Lake Fringe** (Lacustrine Fringe)

2. 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 3

☐ 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 foot deep).

3. 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 10 years.

☒ NO - go to 4

☐ YES - The wetland class is **Riverine**

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

4. 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 5

☒ YES - The wetland class is **Depressional**

5. 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 - 4 APPLY TO DIFFERENT AREAS IN THE WETLAND 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 (the riverine portion is within the boundary of depression)	Depressional
Depressional + Lake Fringe	Depressional
Riverine + Lake Fringe	Riverine

*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 WETLANDS		Points (only 1 score per box)
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 has no surface water outlet	points = 5	3
☒ Wetland has an intermittently flowing outlet	points = 3	
☐ Wetland has a highly constricted permanently flowing outlet	points = 3	
Wetland has a permanently flowing, unconstricted, surface outlet	points = 1	
D 1.2. The soil 2 in below the surface (or duff layer) is true clay or true organic (use NRCS definitions of soils)		
Yes = 3	No = 0	0
D 1.3. Characteristics of persistent vegetation (Emergent, Scrub-shrub, and/or Forested Cowardin classes)		
Wetland has persistent, ungrazed, vegetation for $> \frac{2}{3}$ of area	points = 5	0
Wetland has persistent, ungrazed, vegetation from $\frac{1}{3}$ to $\frac{2}{3}$ of area	points = 3	
Wetland has persistent, ungrazed vegetation from $\frac{1}{10}$ to $< \frac{1}{3}$ of area	points = 1	
Wetland has persistent, ungrazed vegetation $< \frac{1}{10}$ of area	points = 0	
D 1.4. Characteristics of seasonal ponding or inundation:		
<i>This is the area of ponding that fluctuates every year. Do not count the area that is permanently ponded.</i>		
Area seasonally ponded is $> \frac{1}{2}$ total area of wetland	points = 3	1
Area seasonally ponded is $\frac{1}{4}$ - $\frac{1}{2}$ total area of wetland	points = 1	
Area seasonally ponded is $< \frac{1}{4}$ total area of wetland	points = 0	
Total for D 1		4

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 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?		1
Source	Yes = 1 No = 0	
Total for D 2		3

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, or lake that is on the 303(d) list?	Yes = 1 No = 0	0
D 3.2. Is the wetland in a basin or sub-basin where water quality is an issue in some aquatic resource [303(d) list, eutrophic lakes, problems with nuisance and toxic algae]?	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 drainage or basin in which the wetland is found)?	Yes = 2 No = 0	0
Total for D 3		1

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

DEPRESSIONAL WETLANDS		Points (only 1 score per box)
Hydrologic Functions - Indicators that the site functions to reduce flooding and erosion		
D 4.0. Does the site have the potential to reduce flooding and erosion?		
D 4.1. <u>Characteristics of surface water outflows from the wetland:</u>		
Wetland has no surface water outlet	points = 8	4
☒ Wetland has an intermittently flowing outlet	points = 4	
☐ Wetland has a highly constricted permanently flowing outlet	points = 4	
Wetland has a permanently flowing unconstricted surface outlet	points = 0	
(If outlet is a ditch and not permanently flowing treat wetland as "intermittently flowing")		
D 4.2. <u>Depth of storage during wet periods:</u> Estimate the height of ponding above the bottom of the outlet. For wetlands with no outlet, measure from the surface of permanent water or deepest part (if dry).		
Seasonal ponding: > 3 ft above the lowest point in wetland or the surface of permanent ponding	points = 8	2
Seasonal ponding: 2 ft - < 3 ft above the lowest point in wetland or the surface of permanent ponding	points = 6	
☐ The wetland is a headwater wetland	points = 4	
☐ Seasonal ponding: 1 ft - < 2 ft	points = 4	
Seasonal ponding: 6 in - < 1 ft	points = 2	
Seasonal ponding: < 6 in or wetland has only saturated soils	points = 0	
Total for D 4	Add the points in the boxes above	6

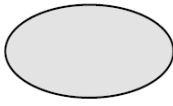
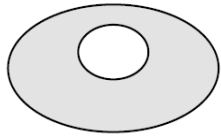
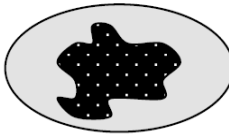
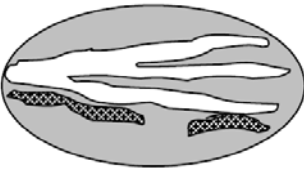
Rating of Site Potential If score is: ☐ 12 - 16 = H ☒ 6 - 11 = M ☐ 0 - 5 = L Record the rating on the first page

D 5.0. Does the landscape have the potential to support the hydrologic functions of the site?		
D 5.1. Does the wetland 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 generates 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 ?	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. <u>The wetland is in a landscape that has flooding problems.</u>		
Choose the description that best matches conditions around the wetland 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), AND		0
Flooding occurs in sub-basin that is immediately down-gradient of wetland	points = 2	
Surface flooding problems are in a sub-basin farther down-gradient	points = 1	
☒ 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.	points = 0	
Explain why		
☐ There are no problems with flooding downstream of the wetland	points = 0	
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		
Total for D 6	Add the points in the boxes above	0

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

These questions apply to wetlands of all HGM classes.		(only 1 score per box)
HABITAT FUNCTIONS - Indicators that site functions to provide important habitat		
H 1.0. Does the wetland have the potential to provide habitat for many species?		
H 1.1. Structure of plant community: Check the Cowardin vegetation classes present and categories of emergent plants. Size threshold for each category is $\geq \frac{1}{4}$ ac or $\geq 10\%$ of the wetland if wetland is < 2.5 ac. ☐ Aquatic bed ☐ Emergent plants 0 - 12 in (0-30 cm) high are the highest layer and have $> 30\%$ cover ☒ Emergent plants > 12 - 40 in (> 30-100 cm) high are the highest layer with $> 30\%$ cover ☐ Emergent plants > 40 in (> 100 cm) high are the highest layer with $> 30\%$ cover ☒ Scrub-shrub (areas where shrubs have $> 30\%$ cover) ☐ Forested (areas where trees have $> 30\%$ cover) 4 or more checks: points = 3 3 checks: points = 2 2 checks: points = 1 1 check: points = 0		1
H 1.2. Is one of the vegetation types Aquatic Bed?		Yes = 1 No = 0
H 1.3. Surface water H 1.3.1. Does the wetland have areas of open water (without emergent or shrub plants) over at least $\frac{1}{4}$ ac OR 10% of its area during the March to early June OR in August to the end of September? Answer YES for Lake Fringe wetlands. ☐ Yes = 3 points & go to H 1.4 No = go to H 1.3.2 H 1.3.2. Does the wetland have an intermittent or permanent, and unvegetated stream within its boundaries, or along one side, over at least $\frac{1}{4}$ ac or 10% of its area? Answer yes only if H 1.3.1 is No. ☐ Yes = 3 No = 0		0
H 1.4. Richness of plant species Count the number of plant species in the wetland that cover at least 10 ft ² . Different patches of the same species can be combined to meet the size threshold. You do not have to name the species. Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Russian olive, Phragmites, Canadian thistle, yellow-flag iris, and saltcedar (Tamarisk) # of species 6 _____ Scoring: > 9 species: points = 2 4 - 9 species: points = 1 < 4 species: points = 0		1
H 1.4. Interspersion of habitats Decide from the diagrams below whether interspersions among types of plant structures (described in H 1.1), and unvegetated areas (open water or mudflats) is high, moderate, low, or none. Use map of Cowardin and emergent plant classes prepared for questions H 1.1 and map of open water from H 1.3. If you have four or more plant classes or three classes and open water, the rating is always high.  None = 0 points  Low = 1 point  Moderate = 2 points  All three diagrams in this row are HIGH = 3 points   Riparian braided channels with 2 classes		2

H 1.6. Special habitat features: <i>Check the habitat features that are present in the wetland. The number of checks is the number of points.</i>			
☐ Loose rocks larger than 4 in OR large, downed, woody debris (> 4 in diameter) within the area of surface ponding or in stream. ☒ Cattails or bulrushes are present within the wetland. ☐ Standing snags (diameter at the bottom > 4 in) in the wetland or within 30 m (100 ft) of the edge ☒ Emergent or shrub vegetation in areas that are permanently inundated/ponded. ☐ Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 45 degree slope) OR signs of recent beaver activity ☐ Invasive species cover less than 20% in each stratum of vegetation (<i>canopy, sub-canopy, shrubs, herbaceous, moss/ground cover</i>)	2		
Total for H 1		Add the points in the boxes above	6

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 habitat functions of the site?		
H 2.1 Accessible habitat (only area of habitat abutting wetland). If total accessible habitat is: <i>Calculate:</i> 0 % undisturbed habitat + (0 % moderate & low intensity land uses / 2) = 0% > 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		
H 2.2. Undisturbed habitat in 1 km Polygon around wetland. <i>Calculate:</i> 20 % undisturbed habitat + (20 % moderate & low intensity land uses / 2) = 30% 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		
H 2.3 Land use intensity in 1 km Polygon: > 50% of 1 km Polygon is high intensity land use points = (-2) Does not meet criterion above points = 0		
H 2.4. The wetland is in an area where annual rainfall is less than 12 in, and its water regime is not influenced by irrigation practices, dams, or water control structures. Generally, this means outside boundaries of reclamation areas, irrigation districts, or reservoirs Yes = 3 No = 0		
Total for H 2		Add the points in the boxes above

Rating of Landscape Potential If Score is: ☐ 4 - 9 = 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 ☐ It has 3 or more priority habitats within 100 m (see Appendix B) ☐ It provides habitat for Threatened or Endangered species (any plant or animal on state or federal lists) ☐ It is mapped as a location for an individual WDFW species ☐ It is a Wetland of High Conservation Value as determined by the Department of Natural Resources ☐ 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 Site has 1 or 2 priority habitats within 100 m (see Appendix B) 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

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate category.

NOTE: A wetland may meet the criteria for more than one set of special characteristics. Record all those that apply. NOTE: All wetlands should also be characterized based on their functions.

Wetland Type	Category
<i>Check off any criteria that apply to the wetland. List the category when the appropriate criteria are met.</i>	
SC 1.0. Vernal Pools Is the wetland less than 4000 ft² , and does it meet at least two of the following criteria? ☐ Its only source of water is rainfall or snowmelt from a small contributing basin and has no groundwater input. ☐ Wetland plants are typically present only in the spring; the summer vegetation is typically upland annuals. <i>If you find perennial, obligate, wetland plants, the wetland is probably NOT a vernal pool.</i> ☐ The soil in the wetland is shallow [< 1 ft (30 cm) deep] and is underlain by an impermeable layer such as basalt or clay. ☐ Surface water is present for less than 120 days during the wet season. ☐ Yes - Go to SC 1.1 ☒ No = Not vernal pool SC 1.1. Is the vernal pool relatively undisturbed in February and March? ☐ Yes - Go to SC 1.2 ☐ No = Not a vernal pool with special characteristics SC 1.2. Is the vernal pool in an area where there are at least 3 separate aquatic resources within 0.5 mi (other wetlands, rivers, lakes etc.)? ☐ Yes = Category II ☐ No = Category III	
SC 2.0. Alkali wetlands Does the wetland meet one of the following criteria? ☐ The wetland has a conductivity > 3.0 mS/cm. ☐ The wetland has a conductivity between 2.0 and 3.0 mS, and more than 50% of the plant cover in the wetland can be classified as "alkali" species (see Table 4 for list of plants found in alkali systems). ☐ If the wetland is dry at the time of your field visit, the central part of the area is covered with a layer of salt. OR does the wetland unit meet two of the following three sub-criteria? ☐ Salt encrustations around more than 75% of the edge of the wetland ☐ More than $\frac{3}{4}$ of the plant cover consists of species listed on Table 4 ☐ A pH above 9.0. All alkali wetlands have a high pH, but please note that some freshwater wetlands may also have a high pH. Thus, pH alone is not a good indicator of alkali wetlands. ☐ Yes = Category I ☒ No = Not an alkali wetland	
SC 3.0. Wetlands of High Conservation Value (WHCV) SC 3.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? ☒ Yes - Go to SC 3.2 ☐ No - Go to SC 3.3 SC 3.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? ☐ Yes = Category I ☒ No = Not WHCV SC 3.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf ☐ Yes - Contact WNHP/WDNR and to SC 3.4 ☒ No = Not WHCV SC 3.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website? ☐ Yes = Category I ☒ No = Not WHCV	

SC 4.0. Bogs and Calcareous Fens <i>Does the wetland (or any part of the wetland unit) meet both the criteria for soils and vegetation in bogs or calcareous fens? Use the key below to identify if the wetland is a bog or calcareous fen. If you answer yes you will still need to rate the wetland based on its functions.</i> SC 4.1. Does an area within the wetland have organic soil horizons (i.e., layers of organic soil), either peats or mucks, that compose 16 in or more of the first 32 in of the soil profile? <i>See Appendix C for a field key to identify organic soils.</i> ☐ Yes - Go to SC 4.3 ☒ No - Go to SC 4.2 SC 4.2. Does an area within the wetland 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? ☐ Yes - Go to SC 4.3 ☒ No = Is not a bog for rating SC 4.3. Does an area within the wetland have more than 70% cover of mosses at ground level AND at least 30% of the total plant cover consists of species in Table 5? ☐ Yes = Category I bog ☐ No - Go to SC 4.4 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 5 are present, the wetland is a bog. SC 4.4. Is an area with peats or mucks forested (> 30% cover) with 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 5 provide more than 30% of the cover under the canopy? ☐ Yes = Category I bog ☐ No - Go to SC 4.5 SC 4.5. Do the species listed in Table 6 comprise at least 20% of the total plant cover within an area of peats and mucks? ☐ Yes = Is a Calcareous Fen for purpose of rating ☒ No - Go to SC 4.6 SC 4.6. Do the species listed in Table 6 comprise at least 10% of the total plant cover in an area of peats and mucks, AND one of the two following conditions is met: ☐ Marl deposits [calcium carbonate (CaCO₃) precipitate] occur on the soil surface or plant stems ☐ The pH of free water is ≥ 6.8 AND electrical conductivity is ≥ 200 uS/cm at multiple locations within the wetland ☐ Yes = Is a Category I calcareous fen ☒ No = Is not a calcareous fen	
SC 5.0. Forested Wetlands <i>Does the wetland have an area of forest rooted within its boundary that meets at least one of the following three criteria? (Continue only if you have identified that a forested class is present in question H)</i> ☐ The wetland is within the 100 year floodplain of a river or stream ☐ Aspen (<i>Populus tremuloides</i>) represents at least 20% of the total cover of woody species ☐ There is at least ¼ ac of trees (even in wetlands smaller than 2.5 ac) that are "mature" or "old-growth" according to the definitions for these priority habitats developed by WDFW (see definitions in question H3.1) ☐ Yes - Go to SC 5.1 ☒ No = Not a forested wetland with special characteristics SC 5.1. Does the wetland have a forest canopy where more than 50% of the tree species (by cover) are slow growing native trees (see Table 7)? ☐ Yes = Category I ☒ No - Go to SC 5.2 SC 5.2. Does the wetland have areas where aspen (<i>Populus tremuloides</i>) represents at least 20% of the total cover of woody species? ☐ Yes = Category I ☒ No - Go to SC 5.3 SC 5.3. Does the wetland have at least ¼ acre with a forest canopy where more than 50% of the tree species (by cover) are fast growing species (see Table 7)? ☐ Yes = Category II ☒ No - Go to SC 5.4 SC 5.4. Is the forested component of the wetland within the 100 year floodplain of a river or stream? ☐ Yes = Category II ☒ No = Not a forested wetland with special characteristics	
Category of wetland based on Special Characteristics <i>Choose the highest rating if wetland falls into several categories</i> If you answered No for all types, enter "Not Applicable" on Summary Form	

Appendix B: WDFW Priority Habitats in Eastern Washington

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*).
- ☐ **Old-growth/Mature forests:** Old-growth east of Cascade crest – Stands are highly variable in tree species composition and structural characteristics due to the influence of fire, climate, and soils. In general, stands will be >150 years of age, with 10 trees/ac (25 trees/ha) that are > 21 in (53 cm) dbh, and 1-3 snags/ac (2.5-7.5 snags/ha) that are > 12-14 in (30-35 cm) diameter. Downed logs may vary from abundant to absent. Canopies may be single or multi-layered. Evidence of human-caused alterations to the stand will be absent or so slight as to not affect the ecosystem's essential structures and functions. 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 and 80-160 years old east 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.
- ☐ **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.
- ☒ **Shrub-steppe:** A nonforested vegetation type consisting of one or more layers of perennial bunchgrasses and a conspicuous but discontinuous layer of shrubs (see Eastside Steppe for sites with little or no shrub cover).
- ☐ **Eastside Steppe:** Nonforested vegetation type dominated by broadleaf herbaceous flora (i.e., forbs), perennial bunchgrasses, or a combination of both. Bluebunch wheatgrass (*Pseudoroegneria spicata*) is often the prevailing cover component along with Idaho fescue (*Festuca idahoensis*), Sandberg bluegrass (*Poa secunda*), rough fescue (*F. campestris*), or needlegrasses (*Achnatherum* spp.).
- ☐ **Juniper Savannah:** All juniper woodlands.

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

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WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: Port of Moses Lake - Segment 1 City/County: Moses Lake/Grant Sampling Date: 5/18/2017
 Applicant/Owner: _____ State: WA Sampling Point: DP-A1
 Investigator(s): SEP/ IDC Section, Township, Range: S13, T19N, R28E
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): concave Slope (%): 0
 Subregion (LRR): Arid West Lat: 47° 8'39.47"N Long: 119°15'20.98"W Datum: _____
 Soil Map Unit Name: 91- Prosser- very fine sandy loams. 5 to 10 percent slopes NWI classification: PEM1C
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ☒ No ☐	Is the Sampled Area within a Wetland? Yes ☒ No ☐
Hydric Soil Present?	Yes ☒ No ☐	
Wetland Hydrology Present?	Yes ☒ No ☐	
Remarks:		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. <u><i>Elaeagnus angustifolia</i> Russian-olive</u>	<u>20</u>	<u>yes</u>	<u>FAC</u>	
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>3</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
4. _____	_____	_____	_____	
50% = _____, 20% = _____	_____	= Total Cover		
Sapling/Shrub Stratum (Plot size: _____)				Prevalence Index worksheet:
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	OBL species _____ x1 = _____
3. _____	_____	_____	_____	FACW species _____ x2 = _____
4. _____	_____	_____	_____	FAC species _____ x3 = _____
5. _____	_____	_____	_____	FACU species _____ x4 = _____
50% = _____, 20% = _____	_____	= Total Cover		UPL species _____ x5 = _____
Herb Stratum (Plot size: _____)				Column Totals: _____ (A) _____ (B)
1. <u><i>Trifolium hybridum</i> - Alsike Clover</u>	<u>60</u>	<u>yes</u>	<u>FAC</u>	Prevalence Index = B/A = _____
2. <u><i>Juncus balticus</i> Baltic rush</u>	<u>30</u>	<u>yes</u>	<u>FAC</u>	
3. _____	_____	_____	_____	Hydrophytic Vegetation Indicators:
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
50% = _____, 20% = _____	_____	= Total Cover		
Woody Vine Stratum (Plot size: _____)				
1. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes ☒ No ☐
2. _____	_____	_____	_____	
50% = _____, 20% = _____	_____	= Total Cover		
% Bare Ground in Herb Stratum _____	% Cover of Biotic Crust _____			
Remarks:				

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type ¹	Loc ²		
0-3	10YR 3/2	100	_____	_____	_____	_____	sandy loam	_____
3-12	10YR 4/2	80	10YR 4/6	20	C	M	sandy loam	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- | | |
|---|--|
| ☐ Histosol (A1) | ☐ Sandy Redox (S5) |
| ☐ Histic Epipedon (A2) | ☐ Stripped Matrix (S6) |
| ☐ Black Histic (A3) | ☐ Loamy Mucky Mineral (F1) |
| ☐ Hydrogen Sulfide (A4) | ☐ Loamy Gleyed Matrix (F2) |
| ☐ Stratified Layers (A5) (LRR C) | ☒ Depleted Matrix (F3) |
| ☐ 1 cm Muck (A9) (LRR D) | ☐ Redox Dark Surface (F6) |
| ☒ Depleted Below Dark Surface (A11) | ☐ Depleted Dark Surface (F7) |
| ☐ Thick Dark Surface (A12) | ☐ Redox Depressions (F8) |
| ☐ Sandy Mucky Mineral (S1) | ☐ Vernal Pools (F9) |
| ☐ Sandy Gleyed Matrix (S4) | |

Indicators for Problematic Hydric Soils³:

- | |
|---|
| ☐ 1 cm Muck (A9) (LRR C) |
| ☐ 2 cm Muck (A10) (LRR B) |
| ☐ Reduced Vertic (F18) |
| ☐ Red Parent Material (TF2) |
| ☐ Other (Explain in Remarks) |

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if present):**

Type: _____

Depth (Inches): _____

Hydric Soils Present?Yes ☒ No ☐

Remarks: _____

HYDROLOGY**Wetland Hydrology Indicators:**

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

Secondary Indicators (2 or more required)

- | | | |
|---|--|---|
| ☐ Surface Water (A1) | ☐ Salt Crust (B11) | ☐ Water Marks (B1) (Riverine) |
| ☐ High Water Table (A2) | ☐ Biotic Crust (B12) | ☐ Sediment Deposits (B2) (Riverine) |
| ☐ Saturation (A3) | ☐ Aquatic Invertebrates (B13) | ☐ Drift Deposits (B3) (Riverine) |
| ☒ Water Marks (B1) (Nonriverine) | ☐ Hydrogen Sulfide Odor (C1) | ☒ Drainage Patterns (B10) |
| ☐ Sediment Deposits (B2) (Nonriverine) | ☐ Oxidized Rhizospheres along Living Roots (C3) | ☐ Dry-Season Water Table (C2) |
| ☐ Drift Deposits (B3) (Nonriverine) | ☐ Presence of Reduced Iron (C4) | ☐ Crayfish Burrows (C8) |
| ☐ Surface Soil Cracks (B6) | ☐ Recent Iron Reduction in Tilled Soils (C6) | ☒ Saturation Visible on Aerial Imagery (C9) |
| ☐ Inundation Visible on Aerial Imagery (B7) | ☐ Thin Muck Surface (C7) | ☐ Shallow Aquitard (D3) |
| ☐ Water-Stained Leaves (B9) | ☐ Other (Explain in Remarks) | ☐ FAC-Neutral Test (D5) |

Field Observations:Surface Water Present? Yes ☐ No ☒ Depth (inches): _____Water Table Present? Yes ☐ No ☒ Depth (inches): _____Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): _____**Wetland Hydrology Present?** Yes ☒ No ☐

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

Remarks: _____

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: Port of Moses Lake - Segment 1 City/County: Moses Lake/Grant Sampling Date: 5/18/2017
 Applicant/Owner: _____ State: WA Sampling Point: DP-A2
 Investigator(s): SEP/ IDC Section, Township, Range: S13, T19N, R28E
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): none Slope (%): 0
 Subregion (LRR): Arid West Lat: 47° 8'39.42"N Long: 119°15'20.44"W Datum: _____
 Soil Map Unit Name: 91- Prosser- very fine sandy loams. 5 to 10 percent slopes NWI classification: PEM1C
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ☐ No ☒	Is the Sampled Area within a Wetland? Yes ☐ No ☒
Hydric Soil Present?	Yes ☐ No ☒	
Wetland Hydrology Present?	Yes ☐ No ☒	
Remarks:		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>33</u> (A/B)																
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
50% = _____, 20% = _____	_____	= Total Cover																		
Sapling/Shrub Stratum (Plot size: _____)																				
1. <u>Artemisia rigida - Scabland sagebrush</u>	<u>40</u>	<u>yes</u>	<u>UPL</u>	Prevalence Index worksheet: <table border="0"> <tr> <td><u>Total % Cover of :</u></td> <td><u>Multiply by:</u></td> </tr> <tr> <td>OBL species _____</td> <td>x1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x2 = _____</td> </tr> <tr> <td>FAC species _____</td> <td>x3 = _____</td> </tr> <tr> <td>FACU species _____</td> <td>x4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x5 = _____</td> </tr> <tr> <td>Column Totals: _____ (A)</td> <td>_____ (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = _____</td> </tr> </table>	<u>Total % Cover of :</u>	<u>Multiply by:</u>	OBL species _____	x1 = _____	FACW species _____	x2 = _____	FAC species _____	x3 = _____	FACU species _____	x4 = _____	UPL species _____	x5 = _____	Column Totals: _____ (A)	_____ (B)	Prevalence Index = B/A = _____	
<u>Total % Cover of :</u>	<u>Multiply by:</u>																			
OBL species _____	x1 = _____																			
FACW species _____	x2 = _____																			
FAC species _____	x3 = _____																			
FACU species _____	x4 = _____																			
UPL species _____	x5 = _____																			
Column Totals: _____ (A)	_____ (B)																			
Prevalence Index = B/A = _____																				
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
50% = _____, 20% = _____	<u>40</u>	= Total Cover																		
Herb Stratum (Plot size: _____)																				
1. <u>Distichlis spicata - Salt grass</u>	<u>20</u>	<u>yes</u>	<u>FAC</u>	Hydrophytic Vegetation Indicators: ☐ Dominance Test is >50% ☐ Prevalence Index is ≤3.0 ¹ ☐ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ☐ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
2. <u>Bromus tectorum - Cheat grass</u>	<u>20</u>	<u>yes</u>	<u>UPL</u>																	
3. <u>unidentified upland grass sp.</u>	<u>10</u>	<u>no</u>	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
50% = _____, 20% = _____	<u>50</u>	= Total Cover																		
Woody Vine Stratum (Plot size: _____)																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
50% = _____, 20% = _____	_____	= Total Cover																		
% Bare Ground in Herb Stratum <u>10</u>	% Cover of Biotic Crust _____																			
Hydrophytic Vegetation Present? Yes ☐ No ☒																				
Remarks:																				

SOIL**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		
0-2	10YR 7/1	100	_____	_____	_____	_____	sandy loam	_____
2-8	10YR 4/4	100	_____	_____	_____	_____	sandy loam	_____
8-16	10YR 5/4	100	_____	_____	_____	_____	sandy loam	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____

¹Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- | | |
|--|---|
| ☐ Histosol (A1) | ☐ Sandy Redox (S5) |
| ☐ Histic Epipedon (A2) | ☐ Stripped Matrix (S6) |
| ☐ Black Histic (A3) | ☐ Loamy Mucky Mineral (F1) |
| ☐ Hydrogen Sulfide (A4) | ☐ Loamy Gleyed Matrix (F2) |
| ☐ Stratified Layers (A5) (LRR C) | ☐ Depleted Matrix (F3) |
| ☐ 1 cm Muck (A9) (LRR D) | ☐ Redox Dark Surface (F6) |
| ☐ Depleted Below Dark Surface (A11) | ☐ Depleted Dark Surface (F7) |
| ☐ Thick Dark Surface (A12) | ☐ Redox Depressions (F8) |
| ☐ Sandy Mucky Mineral (S1) | ☐ Vernal Pools (F9) |
| ☐ Sandy Gleyed Matrix (S4) | |

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR C)**
- ☐ 2 cm Muck (A10) **(LRR B)**
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if present):**

Type: _____

Depth (Inches): _____

Hydric Soils Present?Yes ☐ No ☒

Remarks:

HYDROLOGY**Wetland Hydrology Indicators:**

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

Secondary Indicators (2 or more required)

- | | | |
|--|--|--|
| ☐ Surface Water (A1) | ☐ Salt Crust (B11) | ☐ Water Marks (B1) (Riverine) |
| ☐ High Water Table (A2) | ☐ Biotic Crust (B12) | ☐ Sediment Deposits (B2) (Riverine) |
| ☐ Saturation (A3) | ☐ Aquatic Invertebrates (B13) | ☐ Drift Deposits (B3) (Riverine) |
| ☐ Water Marks (B1) (Nonriverine) | ☐ Hydrogen Sulfide Odor (C1) | ☐ Drainage Patterns (B10) |
| ☐ Sediment Deposits (B2) (Nonriverine) | ☐ Oxidized Rhizospheres along Living Roots (C3) | ☐ Dry-Season Water Table (C2) |
| ☐ Drift Deposits (B3) (Nonriverine) | ☐ Presence of Reduced Iron (C4) | ☐ Crayfish Burrows (C8) |
| ☐ Surface Soil Cracks (B6) | ☐ Recent Iron Reduction in Tilled Soils (C6) | ☐ Saturation Visible on Aerial Imagery (C9) |
| ☐ Inundation Visible on Aerial Imagery (B7) | ☐ Thin Muck Surface (C7) | ☐ Shallow Aquitard (D3) |
| ☐ Water-Stained Leaves (B9) | ☐ Other (Explain in Remarks) | ☐ FAC-Neutral Test (D5) |

Field Observations:Surface Water Present? Yes ☐ No ☒ Depth (inches): _____Water Table Present? Yes ☐ No ☒ Depth (inches): _____Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): _____**Wetland Hydrology Present?** Yes ☐ No ☒

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: Port of Moses Lake - Segment 1 City/County: Moses Lake/Grant Sampling Date: 5/18/2017
 Applicant/Owner: _____ State: WA Sampling Point: DP-A3
 Investigator(s): SEP/ IDC Section, Township, Range: S13, T19N, R28E
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): concave Slope (%): 0
 Subregion (LRR): Arid West Lat: 47° 8'43.25"N Long: 119°15'16.40"W Datum: _____
 Soil Map Unit Name: 94- Prosser- Starbuck very fine sandy, loam 0 -15% slopes NWI classification: PEM1C
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ☒ No ☐	Is the Sampled Area within a Wetland? Yes ☒ No ☐
Hydric Soil Present?	Yes ☒ No ☐	
Wetland Hydrology Present?	Yes ☒ No ☐	
Remarks:		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. <u>Elaeagnus angustifolia Russian-olive</u>	<u>30</u>	<u>yes</u>	<u>FAC</u>	
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>5</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
4. _____	_____	_____	_____	
50% = _____, 20% = _____	<u>30</u>	= Total Cover		
Sapling/Shrub Stratum (Plot size: _____)				Prevalence Index worksheet:
1. <u>Elaeagnus angustifolia Russian-olive saplings</u>	<u>10</u>	<u>yes</u>	<u>FAC</u>	
2. _____	_____	_____	_____	Total % Cover of : _____ Multiply by: _____
3. _____	_____	_____	_____	OBL species _____ x1 = _____
4. _____	_____	_____	_____	FACW species _____ x2 = _____
5. _____	_____	_____	_____	FAC species _____ x3 = _____
50% = _____, 20% = _____	<u>10</u>	= Total Cover		FACU species _____ x4 = _____
Herb Stratum (Plot size: _____)				UPL species _____ x5 = _____
1. <u>Trifolium hybridum - Alsike Clover</u>	<u>20</u>	<u>yes</u>	<u>FAC</u>	Column Totals: _____ (A) _____ (B)
2. <u>Juncus balticus Baltic rush</u>	<u>30</u>	<u>yes</u>	<u>FAC</u>	Prevalence Index = B/A = _____
3. <u>Cirsium arvense - Canadian thistle</u>	<u>10</u>	<u>no</u>	<u>FACU</u>	Hydrophytic Vegetation Indicators:
4. <u>Agrostis stolonifera - Spreading bent</u>	<u>30</u>	<u>yes</u>	<u>FACW</u>	
5. _____	_____	_____	_____	☒ Dominance Test is >50%
6. _____	_____	_____	_____	☐ Prevalence Index is ≤3.0 ¹
7. _____	_____	_____	_____	☐ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
8. _____	_____	_____	_____	☐ Problematic Hydrophytic Vegetation ¹ (Explain)
50% = _____, 20% = _____	<u>90</u>	= Total Cover		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Woody Vine Stratum (Plot size: _____)				Hydrophytic Vegetation Present? Yes ☒ No ☐
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
50% = _____, 20% = _____	_____	= Total Cover		
% Bare Ground in Herb Stratum _____	% Cover of Biotic Crust _____			
Remarks:				

SOIL**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		
0-2	10YR 3/1	100	_____	_____	_____	_____	sandy loam	_____
2-4	10YR 3/2	98	10YR 4/6	2	C	M	sandy loam	_____
4-6	10YR 5/1	95	10YR 4/6	5	C	M	sandy loam	_____
6-16	10YR 3/1	90	10YR 4/6	10	C	M	sandy loam	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- | | |
|--|--|
| ☐ Histosol (A1) | ☐ Sandy Redox (S5) |
| ☐ Histic Epipedon (A2) | ☐ Stripped Matrix (S6) |
| ☐ Black Histic (A3) | ☐ Loamy Mucky Mineral (F1) |
| ☐ Hydrogen Sulfide (A4) | ☐ Loamy Gleyed Matrix (F2) |
| ☐ Stratified Layers (A5) (LRR C) | ☒ Depleted Matrix (F3) |
| ☐ 1 cm Muck (A9) (LRR D) | ☐ Redox Dark Surface (F6) |
| ☐ Depleted Below Dark Surface (A11) | ☐ Depleted Dark Surface (F7) |
| ☐ Thick Dark Surface (A12) | ☐ Redox Depressions (F8) |
| ☐ Sandy Mucky Mineral (S1) | ☐ Vernal Pools (F9) |
| ☐ Sandy Gleyed Matrix (S4) | |

Indicators for Problematic Hydric Soils³:

- | |
|---|
| ☐ 1 cm Muck (A9) (LRR C) |
| ☐ 2 cm Muck (A10) (LRR B) |
| ☐ Reduced Vertic (F18) |
| ☐ Red Parent Material (TF2) |
| ☐ Other (Explain in Remarks) |

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if present):**

Type: _____

Depth (Inches): _____

Hydric Soils Present?Yes ☒ No ☐

Remarks: _____

HYDROLOGY**Wetland Hydrology Indicators:**

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

Secondary Indicators (2 or more required)

- | | | |
|--|--|---|
| ☐ Surface Water (A1) | ☐ Salt Crust (B11) | ☐ Water Marks (B1) (Riverine) |
| ☐ High Water Table (A2) | ☐ Biotic Crust (B12) | ☐ Sediment Deposits (B2) (Riverine) |
| ☐ Saturation (A3) | ☐ Aquatic Invertebrates (B13) | ☐ Drift Deposits (B3) (Riverine) |
| ☐ Water Marks (B1) (Nonriverine) | ☐ Hydrogen Sulfide Odor (C1) | ☒ Drainage Patterns (B10) |
| ☐ Sediment Deposits (B2) (Nonriverine) | ☐ Oxidized Rhizospheres along Living Roots (C3) | ☐ Dry-Season Water Table (C2) |
| ☐ Drift Deposits (B3) (Nonriverine) | ☐ Presence of Reduced Iron (C4) | ☐ Crayfish Burrows (C8) |
| ☐ Surface Soil Cracks (B6) | ☐ Recent Iron Reduction in Tilled Soils (C6) | ☒ Saturation Visible on Aerial Imagery (C9) |
| ☐ Inundation Visible on Aerial Imagery (B7) | ☐ Thin Muck Surface (C7) | ☐ Shallow Aquitard (D3) |
| ☐ Water-Stained Leaves (B9) | ☐ Other (Explain in Remarks) | ☐ FAC-Neutral Test (D5) |

Field Observations:Surface Water Present? Yes ☐ No ☒ Depth (inches): _____Water Table Present? Yes ☐ No ☒ Depth (inches): _____Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): _____**Wetland Hydrology Present?** Yes ☒ No ☐

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

Remarks: _____

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: Port of Moses Lake - Segment 1 City/County: Moses Lake/Grant Sampling Date: 5/18/2017
 Applicant/Owner: _____ State: WA Sampling Point: DP-A4
 Investigator(s): SEP/ IDC Section, Township, Range: S13, T19N, R28E
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): none Slope (%): 0
 Subregion (LRR): Arid West Lat: 47° 8'43.63"N Long: 119°15'16.87"W Datum: _____
 Soil Map Unit Name: 94- Prosser- Starbuck very fine sandy, loam 0 -15% slopes NWI classification: PEM1C
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ☐ No ☒	Is the Sampled Area within a Wetland? Yes ☐ No ☒
Hydric Soil Present?	Yes ☐ No ☒	
Wetland Hydrology Present?	Yes ☐ No ☒	
Remarks:		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. <u>Elaeagnus angustifolia Russian-olive</u>	<u>25</u>	<u>yes</u>	<u>FAC</u>	
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>5</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>40</u> (A/B)
4. _____	_____	_____	_____	
50% = _____, 20% = _____	<u>25</u>	= Total Cover		
Sapling/Shrub Stratum (Plot size: _____)				
1. <u>Artemisia rigida - Scabland sagebrush</u>	<u>20</u>	<u>yes</u>	<u>UPL</u>	Prevalence Index worksheet:
2. <u>Artemisia campestris - Pacific wormwood</u>	<u>20</u>	<u>yes</u>	<u>UPL</u>	
3. _____	_____	_____	_____	Total % Cover of : _____ Multiply by: _____
4. _____	_____	_____	_____	OBL species _____ x1 = _____
5. _____	_____	_____	_____	FACW species _____ x2 = _____
50% = _____, 20% = _____	<u>40</u>	= Total Cover		FAC species _____ x3 = _____
Herb Stratum (Plot size: _____)				
1. <u>Distichlis spicata - Salt grass</u>	<u>40</u>	<u>yes</u>	<u>FAC</u>	FACU species _____ x4 = _____
2. <u>Bromus tectorum - Cheat grass</u>	<u>20</u>	<u>yes</u>	<u>UPL</u>	UPL species _____ x5 = _____
3. <u>Thlaspi arvense - Field pennycress</u>	<u>10</u>	<u>no</u>	<u>UPL</u>	Column Totals: _____ (A) _____ (B)
4. <u>Tragopogon dubius - Yellow salsify</u>	<u>10</u>	<u>no</u>	<u>NI</u>	Prevalence Index = B/A = _____
5. _____	_____	_____	_____	Hydrophytic Vegetation Indicators:
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
50% = _____, 20% = _____	<u>80</u>	= Total Cover		☐ Dominance Test is >50%
Woody Vine Stratum (Plot size: _____)				
1. _____	_____	_____	_____	☐ Prevalence Index is ≤3.0 ¹
2. _____	_____	_____	_____	☐ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
50% = _____, 20% = _____	_____	= Total Cover		☐ Problematic Hydrophytic Vegetation ¹ (Explain)
% Bare Ground in Herb Stratum _____	% Cover of Biotic Crust _____			
Hydrophytic Vegetation Present? Yes ☐ No ☒				
Remarks:				

SOIL**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		
0-2	10YR 4/3	100	_____	_____	_____	_____	sandy loam	_____
2-8	10YR 4/4	100	_____	_____	_____	_____	sandy loam	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____

¹Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- | | |
|--|---|
| ☐ Histosol (A1) | ☐ Sandy Redox (S5) |
| ☐ Histic Epipedon (A2) | ☐ Stripped Matrix (S6) |
| ☐ Black Histic (A3) | ☐ Loamy Mucky Mineral (F1) |
| ☐ Hydrogen Sulfide (A4) | ☐ Loamy Gleyed Matrix (F2) |
| ☐ Stratified Layers (A5) (LRR C) | ☐ Depleted Matrix (F3) |
| ☐ 1 cm Muck (A9) (LRR D) | ☐ Redox Dark Surface (F6) |
| ☐ Depleted Below Dark Surface (A11) | ☐ Depleted Dark Surface (F7) |
| ☐ Thick Dark Surface (A12) | ☐ Redox Depressions (F8) |
| ☐ Sandy Mucky Mineral (S1) | ☐ Vernal Pools (F9) |
| ☐ Sandy Gleyed Matrix (S4) | |

Indicators for Problematic Hydric Soils³:

- | |
|---|
| ☐ 1 cm Muck (A9) (LRR C) |
| ☐ 2 cm Muck (A10) (LRR B) |
| ☐ Reduced Vertic (F18) |
| ☐ Red Parent Material (TF2) |
| ☐ Other (Explain in Remarks) |

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if present):**

Type: _____

Depth (Inches): _____

Hydric Soils Present?Yes ☐ No ☒

Remarks:

HYDROLOGY**Wetland Hydrology Indicators:**

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

Secondary Indicators (2 or more required)

- | | | |
|--|--|--|
| ☐ Surface Water (A1) | ☐ Salt Crust (B11) | ☐ Water Marks (B1) (Riverine) |
| ☐ High Water Table (A2) | ☐ Biotic Crust (B12) | ☐ Sediment Deposits (B2) (Riverine) |
| ☐ Saturation (A3) | ☐ Aquatic Invertebrates (B13) | ☐ Drift Deposits (B3) (Riverine) |
| ☐ Water Marks (B1) (Nonriverine) | ☐ Hydrogen Sulfide Odor (C1) | ☐ Drainage Patterns (B10) |
| ☐ Sediment Deposits (B2) (Nonriverine) | ☐ Oxidized Rhizospheres along Living Roots (C3) | ☐ Dry-Season Water Table (C2) |
| ☐ Drift Deposits (B3) (Nonriverine) | ☐ Presence of Reduced Iron (C4) | ☐ Crayfish Burrows (C8) |
| ☐ Surface Soil Cracks (B6) | ☐ Recent Iron Reduction in Tilled Soils (C6) | ☐ Saturation Visible on Aerial Imagery (C9) |
| ☐ Inundation Visible on Aerial Imagery (B7) | ☐ Thin Muck Surface (C7) | ☐ Shallow Aquitard (D3) |
| ☐ Water-Stained Leaves (B9) | ☐ Other (Explain in Remarks) | ☐ FAC-Neutral Test (D5) |

Field Observations:Surface Water Present? Yes ☐ No ☒ Depth (inches): _____Water Table Present? Yes ☐ No ☒ Depth (inches): _____Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): _____**Wetland Hydrology Present?** Yes ☐ No ☒

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: Port of Moses Lake - Segment 1 City/County: Moses Lake/Grant Sampling Date: 5/18/2017
 Applicant/Owner: _____ State: WA Sampling Point: DP-A5
 Investigator(s): SEP/ IDC Section, Township, Range: S13, T19N, R28E
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): concave Slope (%): 0
 Subregion (LRR): Arid West Lat: 47° 8'33.76"N Long: 119°15'12.73"W Datum: _____
 Soil Map Unit Name: 182 - Wiehl fine sandy loam, 2 to 5 percent slopes NWI classification: PEM1C
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ☒ No ☐	Is the Sampled Area within a Wetland? Yes ☒ No ☐
Hydric Soil Present?	Yes ☒ No ☐	
Wetland Hydrology Present?	Yes ☒ No ☐	
Remarks:		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)																
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
50% = _____, 20% = _____	_____	= Total Cover																		
Sapling/Shrub Stratum (Plot size: _____)																				
1. <u>Elaeagnus angustifolia Russian-olive</u>	<u>40</u>	<u>yes</u>	<u>FAC</u>	Prevalence Index worksheet: <table border="0"> <tr> <td><u>Total % Cover of :</u></td> <td><u>Multiply by:</u></td> </tr> <tr> <td>OBL species _____</td> <td>x1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x2 = _____</td> </tr> <tr> <td>FAC species _____</td> <td>x3 = _____</td> </tr> <tr> <td>FACU species _____</td> <td>x4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x5 = _____</td> </tr> <tr> <td>Column Totals: _____ (A)</td> <td>_____ (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = _____</td> </tr> </table>	<u>Total % Cover of :</u>	<u>Multiply by:</u>	OBL species _____	x1 = _____	FACW species _____	x2 = _____	FAC species _____	x3 = _____	FACU species _____	x4 = _____	UPL species _____	x5 = _____	Column Totals: _____ (A)	_____ (B)	Prevalence Index = B/A = _____	
<u>Total % Cover of :</u>	<u>Multiply by:</u>																			
OBL species _____	x1 = _____																			
FACW species _____	x2 = _____																			
FAC species _____	x3 = _____																			
FACU species _____	x4 = _____																			
UPL species _____	x5 = _____																			
Column Totals: _____ (A)	_____ (B)																			
Prevalence Index = B/A = _____																				
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
50% = _____, 20% = _____	<u>40</u>	= Total Cover																		
Herb Stratum (Plot size: _____)																				
1. <u>Trifolium hybridum - Alsike Clover</u>	<u>40</u>	<u>yes</u>	<u>FAC</u>																	
2. <u>Juncus balticus Baltic rush</u>	<u>40</u>	<u>yes</u>	<u>FACW</u>																	
3. <u>Holcus lanatus -Common velvetgrass</u>	<u>20</u>	<u>yes</u>	<u>FAC</u>																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
50% = _____, 20% = _____	<u>100</u>	= Total Cover																		
Woody Vine Stratum (Plot size: _____)																				
1. _____	_____	_____	_____	Hydrophytic Vegetation Indicators: ☒ Dominance Test is >50% ☐ Prevalence Index is ≤3.0 ¹ ☐ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ☐ Problematic Hydrophytic Vegetation ¹ (Explain)																
2. _____	_____	_____	_____																	
50% = _____, 20% = _____	_____	= Total Cover																		
% Bare Ground in Herb Stratum _____	% Cover of Biotic Crust _____			Hydrophytic Vegetation Present? Yes ☒ No ☐																
Remarks:																				

SOIL**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		
0-2	10YR 3/2	90	10YR 3/1	10	C	M	sandy loam	_____
2-11	10YR 4/2	90	10YR 4/6	10	C	M	sandy loam	_____
11-16	10YR 4/2	80	10YR 4/6	20	C	M	sandy loam	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- | | |
|--|--|
| ☐ Histosol (A1) | ☐ Sandy Redox (S5) |
| ☐ Histic Epipedon (A2) | ☐ Stripped Matrix (S6) |
| ☐ Black Histic (A3) | ☐ Loamy Mucky Mineral (F1) |
| ☐ Hydrogen Sulfide (A4) | ☐ Loamy Gleyed Matrix (F2) |
| ☐ Stratified Layers (A5) (LRR C) | ☒ Depleted Matrix (F3) |
| ☐ 1 cm Muck (A9) (LRR D) | ☐ Redox Dark Surface (F6) |
| ☐ Depleted Below Dark Surface (A11) | ☐ Depleted Dark Surface (F7) |
| ☐ Thick Dark Surface (A12) | ☐ Redox Depressions (F8) |
| ☐ Sandy Mucky Mineral (S1) | ☐ Vernal Pools (F9) |
| ☐ Sandy Gleyed Matrix (S4) | |

Indicators for Problematic Hydric Soils³:

- | |
|---|
| ☐ 1 cm Muck (A9) (LRR C) |
| ☐ 2 cm Muck (A10) (LRR B) |
| ☐ Reduced Vertic (F18) |
| ☐ Red Parent Material (TF2) |
| ☐ Other (Explain in Remarks) |

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if present):**

Type: _____

Depth (Inches): _____

Hydric Soils Present?Yes ☒ No ☐

Remarks: _____

HYDROLOGY**Wetland Hydrology Indicators:**

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

Secondary Indicators (2 or more required)

- | | | |
|--|--|---|
| ☐ Surface Water (A1) | ☐ Salt Crust (B11) | ☐ Water Marks (B1) (Riverine) |
| ☐ High Water Table (A2) | ☐ Biotic Crust (B12) | ☐ Sediment Deposits (B2) (Riverine) |
| ☐ Saturation (A3) | ☐ Aquatic Invertebrates (B13) | ☐ Drift Deposits (B3) (Riverine) |
| ☐ Water Marks (B1) (Nonriverine) | ☐ Hydrogen Sulfide Odor (C1) | ☒ Drainage Patterns (B10) |
| ☐ Sediment Deposits (B2) (Nonriverine) | ☐ Oxidized Rhizospheres along Living Roots (C3) | ☐ Dry-Season Water Table (C2) |
| ☐ Drift Deposits (B3) (Nonriverine) | ☐ Presence of Reduced Iron (C4) | ☐ Crayfish Burrows (C8) |
| ☐ Surface Soil Cracks (B6) | ☐ Recent Iron Reduction in Tilled Soils (C6) | ☒ Saturation Visible on Aerial Imagery (C9) |
| ☐ Inundation Visible on Aerial Imagery (B7) | ☐ Thin Muck Surface (C7) | ☐ Shallow Aquitard (D3) |
| ☐ Water-Stained Leaves (B9) | ☐ Other (Explain in Remarks) | ☐ FAC-Neutral Test (D5) |

Field Observations:Surface Water Present? Yes ☐ No ☒ Depth (inches): _____Water Table Present? Yes ☐ No ☒ Depth (inches): _____Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): _____**Wetland Hydrology Present?** Yes ☒ No ☐

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

Remarks: _____

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: Port of Moses Lake - Segment 1 City/County: Moses Lake/Grant Sampling Date: 5/18/2017
 Applicant/Owner: _____ State: WA Sampling Point: DP-A6
 Investigator(s): SEP/ IDC Section, Township, Range: S13, T19N, R28E
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): none Slope (%): 0
 Subregion (LRR): Arid West Lat: 47° 8'34.01"N Long: 119°15'13.79"W Datum: _____
 Soil Map Unit Name: 94- Prosser- Starbuck very fine sandy, loam 0 -15% slopes NWI classification: PEM1C
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ☐ No ☒	Is the Sampled Area within a Wetland? Yes ☐ No ☒
Hydric Soil Present?	Yes ☐ No ☒	
Wetland Hydrology Present?	Yes ☐ No ☒	
Remarks:		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:																								
1. _____	_____	_____	_____		Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)																							
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>3</u> (B)																								
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>67</u> (A/B)																								
4. _____	_____	_____	_____																									
50% = _____, 20% = _____	_____	= Total Cover																										
Sapling/Shrub Stratum (Plot size: _____)																												
1. _____	_____	_____	_____	Prevalence Index worksheet: <table border="0"> <tr> <td colspan="2"><u>Total % Cover of :</u></td> <td><u>Multiply by:</u></td> </tr> <tr> <td>OBL species</td> <td>_____</td> <td>x1 = _____</td> </tr> <tr> <td>FACW species</td> <td><u>15</u></td> <td>x2 = <u>30</u></td> </tr> <tr> <td>FAC species</td> <td><u>45</u></td> <td>x3 = <u>135</u></td> </tr> <tr> <td>FACU species</td> <td><u>30</u></td> <td>x4 = <u>120</u></td> </tr> <tr> <td>UPL species</td> <td><u>10</u></td> <td>x5 = <u>50</u></td> </tr> <tr> <td>Column Totals:</td> <td><u>100</u> (A)</td> <td><u>335</u> (B)</td> </tr> <tr> <td colspan="3">Prevalence Index = B/A = <u>3.4</u></td> </tr> </table>	<u>Total % Cover of :</u>		<u>Multiply by:</u>	OBL species	_____	x1 = _____	FACW species	<u>15</u>	x2 = <u>30</u>	FAC species	<u>45</u>	x3 = <u>135</u>	FACU species	<u>30</u>	x4 = <u>120</u>	UPL species	<u>10</u>	x5 = <u>50</u>	Column Totals:	<u>100</u> (A)	<u>335</u> (B)	Prevalence Index = B/A = <u>3.4</u>		
<u>Total % Cover of :</u>		<u>Multiply by:</u>																										
OBL species	_____	x1 = _____																										
FACW species	<u>15</u>	x2 = <u>30</u>																										
FAC species	<u>45</u>	x3 = <u>135</u>																										
FACU species	<u>30</u>	x4 = <u>120</u>																										
UPL species	<u>10</u>	x5 = <u>50</u>																										
Column Totals:	<u>100</u> (A)	<u>335</u> (B)																										
Prevalence Index = B/A = <u>3.4</u>																												
2. _____	_____	_____	_____																									
3. _____	_____	_____	_____																									
4. _____	_____	_____	_____																									
5. _____	_____	_____	_____																									
50% = _____, 20% = _____	_____	= Total Cover																										
Herb Stratum (Plot size: _____)																												
1. <u>Distichlis spicata - Salt grass</u>	<u>25</u>	<u>yes</u>	<u>FAC</u>	Hydrophytic Vegetation Indicators: ☐ Dominance Test is >50% ☐ Prevalence Index is ≤3.0 ¹ ☐ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ☐ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																								
2. <u>Bromus tectorum - Cheat grass</u>	<u>10</u>	<u>no</u>	<u>UPL</u>																									
3. <u>Trifolium hybridum - Alsike Clover</u>	<u>20</u>	<u>yes</u>	<u>FAC</u>																									
4. <u>Agrostis stolonifera - Spreading bent</u>	<u>10</u>	<u>no</u>	<u>FACW</u>																									
5. <u>Juncus balticus - Baltic rush</u>	<u>5</u>	<u>no</u>	<u>FACW</u>																									
6. <u>Festuca idahoensis - Bluebunch fescue</u>	<u>30</u>	<u>yes</u>	<u>FACU</u>																									
7. _____	_____	_____	_____																									
8. _____	_____	_____	_____																									
50% = _____, 20% = _____	<u>100</u>	= Total Cover																										
Woody Vine Stratum (Plot size: _____)																												
1. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes ☐ No ☒																								
2. _____	_____	_____	_____																									
50% = _____, 20% = _____	_____	= Total Cover																										
% Bare Ground in Herb Stratum _____	% Cover of Biotic Crust _____																											
Remarks: Dominance test is greater than 50%, but prevalence index is greater than 3. Vegetation is hydrophytic in this location.																												

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type ¹	Loc ²		
0-1	10YR 3/2	100	_____	_____	_____	_____	sandy loam	_____
1-3	10YR 7/1	100	_____	_____	_____	_____	Ash layer	_____
3-16	10YR 4/2	100	_____	_____	_____	_____	sandy loam	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____

¹Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- | | |
|--|---|
| ☐ Histosol (A1) | ☐ Sandy Redox (S5) |
| ☐ Histic Epipedon (A2) | ☐ Stripped Matrix (S6) |
| ☐ Black Histic (A3) | ☐ Loamy Mucky Mineral (F1) |
| ☐ Hydrogen Sulfide (A4) | ☐ Loamy Gleyed Matrix (F2) |
| ☐ Stratified Layers (A5) (LRR C) | ☐ Depleted Matrix (F3) |
| ☐ 1 cm Muck (A9) (LRR D) | ☐ Redox Dark Surface (F6) |
| ☐ Depleted Below Dark Surface (A11) | ☐ Depleted Dark Surface (F7) |
| ☐ Thick Dark Surface (A12) | ☐ Redox Depressions (F8) |
| ☐ Sandy Mucky Mineral (S1) | ☐ Vernal Pools (F9) |
| ☐ Sandy Gleyed Matrix (S4) | |

Indicators for Problematic Hydric Soils³:

- | |
|---|
| ☐ 1 cm Muck (A9) (LRR C) |
| ☐ 2 cm Muck (A10) (LRR B) |
| ☐ Reduced Vertic (F18) |
| ☐ Red Parent Material (TF2) |
| ☐ Other (Explain in Remarks) |

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if present):**

Type: _____

Depth (Inches): _____

Hydric Soils Present?Yes ☐ No ☒

Remarks:

HYDROLOGY**Wetland Hydrology Indicators:**

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

Secondary Indicators (2 or more required)

- | | | |
|--|--|--|
| ☐ Surface Water (A1) | ☐ Salt Crust (B11) | ☐ Water Marks (B1) (Riverine) |
| ☐ High Water Table (A2) | ☐ Biotic Crust (B12) | ☐ Sediment Deposits (B2) (Riverine) |
| ☐ Saturation (A3) | ☐ Aquatic Invertebrates (B13) | ☐ Drift Deposits (B3) (Riverine) |
| ☐ Water Marks (B1) (Nonriverine) | ☐ Hydrogen Sulfide Odor (C1) | ☐ Drainage Patterns (B10) |
| ☐ Sediment Deposits (B2) (Nonriverine) | ☐ Oxidized Rhizospheres along Living Roots (C3) | ☐ Dry-Season Water Table (C2) |
| ☐ Drift Deposits (B3) (Nonriverine) | ☐ Presence of Reduced Iron (C4) | ☐ Crayfish Burrows (C8) |
| ☐ Surface Soil Cracks (B6) | ☐ Recent Iron Reduction in Tilled Soils (C6) | ☐ Saturation Visible on Aerial Imagery (C9) |
| ☐ Inundation Visible on Aerial Imagery (B7) | ☐ Thin Muck Surface (C7) | ☐ Shallow Aquitard (D3) |
| ☐ Water-Stained Leaves (B9) | ☐ Other (Explain in Remarks) | ☐ FAC-Neutral Test (D5) |

Field Observations:Surface Water Present? Yes ☐ No ☒ Depth (inches): _____Water Table Present? Yes ☐ No ☒ Depth (inches): _____Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): _____**Wetland Hydrology Present?** Yes ☐ No ☒

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: Port of Moses Lake - NCBR Segment 1 City/County: Moses Lake/Grant Sampling Date: 5/18/2017
 Applicant/Owner: _____ State: WA Sampling Point: DP-A7
 Investigator(s): SEP/ IDC Section, Township, Range: S13, T19N, R28E
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): concave Slope (%): 0
 Subregion (LRR): Arid West Lat: 47° 8'34.08"N Long: 119°15'6.68"W Datum: _____
 Soil Map Unit Name: 182 - Wiehl fine sandy loam, 2 to 5 percent slopes NWI classification: PEM1C
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ☒ No ☐	Is the Sampled Area within a Wetland? Yes ☒ No ☐
Hydric Soil Present?	Yes ☒ No ☐	
Wetland Hydrology Present?	Yes ☒ No ☐	
Remarks:		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)																
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
50% = _____, 20% = _____	_____	= Total Cover																		
Sapling/Shrub Stratum (Plot size: _____)																				
1. <u>Elaeagnus angustifolia Russian-olive</u>	<u>40</u>	<u>yes</u>	<u>FAC</u>	Prevalence Index worksheet: <table border="0"> <tr> <td><u>Total % Cover of :</u></td> <td><u>Multiply by:</u></td> </tr> <tr> <td>OBL species _____</td> <td>x1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x2 = _____</td> </tr> <tr> <td>FAC species _____</td> <td>x3 = _____</td> </tr> <tr> <td>FACU species _____</td> <td>x4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x5 = _____</td> </tr> <tr> <td>Column Totals: _____ (A)</td> <td>_____ (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = _____</td> </tr> </table>	<u>Total % Cover of :</u>	<u>Multiply by:</u>	OBL species _____	x1 = _____	FACW species _____	x2 = _____	FAC species _____	x3 = _____	FACU species _____	x4 = _____	UPL species _____	x5 = _____	Column Totals: _____ (A)	_____ (B)	Prevalence Index = B/A = _____	
<u>Total % Cover of :</u>	<u>Multiply by:</u>																			
OBL species _____	x1 = _____																			
FACW species _____	x2 = _____																			
FAC species _____	x3 = _____																			
FACU species _____	x4 = _____																			
UPL species _____	x5 = _____																			
Column Totals: _____ (A)	_____ (B)																			
Prevalence Index = B/A = _____																				
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
50% = _____, 20% = _____	<u>40</u>	= Total Cover																		
Herb Stratum (Plot size: _____)																				
1. <u>Trifolium hybridum - Alsike Clover</u>	<u>30</u>	<u>yes</u>	<u>FAC</u>	Hydrophytic Vegetation Indicators: ☒ Dominance Test is >50% ☐ Prevalence Index is ≤3.0 ¹ ☐ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ☐ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
2. <u>Juncus balticus Baltic rush</u>	<u>30</u>	<u>yes</u>	<u>FACW</u>																	
3. <u>Holcus lanatus -Common velvetgrass</u>	<u>30</u>	<u>yes</u>	<u>FAC</u>																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
50% = _____, 20% = _____	<u>100</u>	= Total Cover																		
Woody Vine Stratum (Plot size: _____)																				
1. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes ☒ No ☐																
2. _____	_____	_____	_____																	
50% = _____, 20% = _____	_____	= Total Cover																		
% Bare Ground in Herb Stratum _____	% Cover of Biotic Crust _____																			
Remarks:																				

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type ¹	Loc ²		
0-3	10YR 4/3	100	_____	_____	_____	_____	_____	_____
3-6	2.5Y 4/3	100	_____	_____	_____	_____	_____	_____
6-12	2.5YR 4/2	90	10YR 4/6	10	C	M	sandy loam	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- | | |
|--|--|
| ☐ Histosol (A1) | ☐ Sandy Redox (S5) |
| ☐ Histic Epipedon (A2) | ☐ Stripped Matrix (S6) |
| ☐ Black Histic (A3) | ☐ Loamy Mucky Mineral (F1) |
| ☐ Hydrogen Sulfide (A4) | ☐ Loamy Gleyed Matrix (F2) |
| ☐ Stratified Layers (A5) (LRR C) | ☒ Depleted Matrix (F3) |
| ☐ 1 cm Muck (A9) (LRR D) | ☐ Redox Dark Surface (F6) |
| ☐ Depleted Below Dark Surface (A11) | ☐ Depleted Dark Surface (F7) |
| ☐ Thick Dark Surface (A12) | ☐ Redox Depressions (F8) |
| ☐ Sandy Mucky Mineral (S1) | ☐ Vernal Pools (F9) |
| ☐ Sandy Gleyed Matrix (S4) | |

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR C)**
- ☐ 2 cm Muck (A10) **(LRR B)**
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if present):**

Type: _____

Depth (Inches): _____

Hydric Soils Present?Yes ☒ No ☐

Remarks: _____

HYDROLOGY**Wetland Hydrology Indicators:**

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

Secondary Indicators (2 or more required)

- | | | |
|--|--|---|
| ☐ Surface Water (A1) | ☐ Salt Crust (B11) | ☐ Water Marks (B1) (Riverine) |
| ☐ High Water Table (A2) | ☐ Biotic Crust (B12) | ☐ Sediment Deposits (B2) (Riverine) |
| ☐ Saturation (A3) | ☐ Aquatic Invertebrates (B13) | ☐ Drift Deposits (B3) (Riverine) |
| ☐ Water Marks (B1) (Nonriverine) | ☐ Hydrogen Sulfide Odor (C1) | ☒ Drainage Patterns (B10) |
| ☐ Sediment Deposits (B2) (Nonriverine) | ☐ Oxidized Rhizospheres along Living Roots (C3) | ☐ Dry-Season Water Table (C2) |
| ☐ Drift Deposits (B3) (Nonriverine) | ☐ Presence of Reduced Iron (C4) | ☐ Crayfish Burrows (C8) |
| ☐ Surface Soil Cracks (B6) | ☐ Recent Iron Reduction in Tilled Soils (C6) | ☒ Saturation Visible on Aerial Imagery (C9) |
| ☐ Inundation Visible on Aerial Imagery (B7) | ☐ Thin Muck Surface (C7) | ☐ Shallow Aquitard (D3) |
| ☐ Water-Stained Leaves (B9) | ☐ Other (Explain in Remarks) | ☐ FAC-Neutral Test (D5) |

Field Observations:Surface Water Present? Yes ☐ No ☒ Depth (inches): _____Water Table Present? Yes ☐ No ☒ Depth (inches): _____Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): _____**Wetland Hydrology Present?** Yes ☒ No ☐

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

Remarks: _____

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: Port of Moses Lake - Segment 1 City/County: Moses Lake/Grant Sampling Date: 5/18/2017
 Applicant/Owner: _____ State: WA Sampling Point: DP-A8
 Investigator(s): SEP/ IDC Section, Township, Range: S13, T19N, R28E
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): none Slope (%): 0
 Subregion (LRR): Arid West Lat: 47° 8'34.53"N Long: 119°15'5.39"W Datum: _____
 Soil Map Unit Name: 182 - Wiehl fine sandy loam, 2 to 5 percent slopes NWI classification: PEM1C
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ☐ No ☒	Is the Sampled Area within a Wetland? Yes ☐ No ☒
Hydric Soil Present?	Yes ☐ No ☒	
Wetland Hydrology Present?	Yes ☐ No ☒	
Remarks:		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:																
1. _____	_____	_____	_____		Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A)															
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>3</u> (B)																
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>33</u> (A/B)																
4. _____	_____	_____	_____	Prevalence Index worksheet: <table border="0"> <tr> <td><u>Total % Cover of:</u></td> <td><u>Multiply by:</u></td> </tr> <tr> <td>OBL species _____</td> <td>x1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x2 = _____</td> </tr> <tr> <td>FAC species _____</td> <td>x3 = _____</td> </tr> <tr> <td>FACU species _____</td> <td>x4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x5 = _____</td> </tr> <tr> <td>Column Totals: _____ (A)</td> <td>_____ (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = _____</td> </tr> </table>	<u>Total % Cover of:</u>	<u>Multiply by:</u>	OBL species _____	x1 = _____	FACW species _____	x2 = _____	FAC species _____	x3 = _____	FACU species _____	x4 = _____	UPL species _____	x5 = _____	Column Totals: _____ (A)	_____ (B)	Prevalence Index = B/A = _____	
<u>Total % Cover of:</u>	<u>Multiply by:</u>																			
OBL species _____	x1 = _____																			
FACW species _____	x2 = _____																			
FAC species _____	x3 = _____																			
FACU species _____	x4 = _____																			
UPL species _____	x5 = _____																			
Column Totals: _____ (A)	_____ (B)																			
Prevalence Index = B/A = _____																				
50% = _____, 20% = _____	_____	= Total Cover																		
<u>Sapling/Shrub Stratum (Plot size: _____)</u>																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
50% = _____, 20% = _____	_____	= Total Cover																		
<u>Herb Stratum (Plot size: _____)</u>																				
1. <u>Taraxacum officinale - Common dandelion</u>	<u>20</u>	<u>yes</u>	<u>FACU</u>																	
2. <u>Festuca idahoensis - Bluebunch fescue</u>	<u>40</u>	<u>yes</u>	<u>FACU</u>																	
3. <u>Trifolium hybridum - Alsike Clover</u>	<u>40</u>	<u>yes</u>	<u>FAC</u>																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
50% = _____, 20% = _____	<u>100</u>	= Total Cover																		
<u>Woody Vine Stratum (Plot size: _____)</u>																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
50% = _____, 20% = _____	_____	= Total Cover																		
% Bare Ground in Herb Stratum _____	% Cover of Biotic Crust _____																			
Hydrophytic Vegetation Indicators: ☐ Dominance Test is >50% ☐ Prevalence Index is ≤3.0 ¹ ☐ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ☐ 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 ☒																				
Remarks:																				

SOIL**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		
0-2	10YR 3/2	100	_____	_____	_____	_____	sandy loam	_____
2-8	10YR 4/3	90	10YR 5/6	10	_____	_____	Sandy loam	_____
8-12	10YR 3/3	90	10YR 3/6	10	_____	_____	Sandy loam	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____

¹Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- | | |
|--|---|
| ☐ Histosol (A1) | ☐ Sandy Redox (S5) |
| ☐ Histic Epipedon (A2) | ☐ Stripped Matrix (S6) |
| ☐ Black Histic (A3) | ☐ Loamy Mucky Mineral (F1) |
| ☐ Hydrogen Sulfide (A4) | ☐ Loamy Gleyed Matrix (F2) |
| ☐ Stratified Layers (A5) (LRR C) | ☐ Depleted Matrix (F3) |
| ☐ 1 cm Muck (A9) (LRR D) | ☐ Redox Dark Surface (F6) |
| ☐ Depleted Below Dark Surface (A11) | ☐ Depleted Dark Surface (F7) |
| ☐ Thick Dark Surface (A12) | ☐ Redox Depressions (F8) |
| ☐ Sandy Mucky Mineral (S1) | ☐ Vernal Pools (F9) |
| ☐ Sandy Gleyed Matrix (S4) | |

Indicators for Problematic Hydric Soils³:

- | |
|---|
| ☐ 1 cm Muck (A9) (LRR C) |
| ☐ 2 cm Muck (A10) (LRR B) |
| ☐ Reduced Vertic (F18) |
| ☐ Red Parent Material (TF2) |
| ☐ Other (Explain in Remarks) |

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if present):**

Type: _____

Depth (Inches): _____

Hydric Soils Present?Yes ☐ No ☒

Remarks: _____

HYDROLOGY**Wetland Hydrology Indicators:**

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

Secondary Indicators (2 or more required)

- | | | |
|--|--|--|
| ☐ Surface Water (A1) | ☐ Salt Crust (B11) | ☐ Water Marks (B1) (Riverine) |
| ☐ High Water Table (A2) | ☐ Biotic Crust (B12) | ☐ Sediment Deposits (B2) (Riverine) |
| ☐ Saturation (A3) | ☐ Aquatic Invertebrates (B13) | ☐ Drift Deposits (B3) (Riverine) |
| ☐ Water Marks (B1) (Nonriverine) | ☐ Hydrogen Sulfide Odor (C1) | ☐ Drainage Patterns (B10) |
| ☐ Sediment Deposits (B2) (Nonriverine) | ☐ Oxidized Rhizospheres along Living Roots (C3) | ☐ Dry-Season Water Table (C2) |
| ☐ Drift Deposits (B3) (Nonriverine) | ☐ Presence of Reduced Iron (C4) | ☐ Crayfish Burrows (C8) |
| ☐ Surface Soil Cracks (B6) | ☐ Recent Iron Reduction in Tilled Soils (C6) | ☐ Saturation Visible on Aerial Imagery (C9) |
| ☐ Inundation Visible on Aerial Imagery (B7) | ☐ Thin Muck Surface (C7) | ☐ Shallow Aquitard (D3) |
| ☐ Water-Stained Leaves (B9) | ☐ Other (Explain in Remarks) | ☐ FAC-Neutral Test (D5) |

Field Observations:Surface Water Present? Yes ☐ No ☒ Depth (inches): _____Water Table Present? Yes ☐ No ☒ Depth (inches): _____Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): _____**Wetland Hydrology Present?** Yes ☐ No ☒

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

Remarks: _____

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: Port of Moses Lake - Segment 1 City/County: Moses Lake/Grant Sampling Date: 5/18/2017
 Applicant/Owner: _____ State: WA Sampling Point: DP -A9
 Investigator(s): SEP/ IDC Section, Township, Range: S13, T19N, R28E
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): concave Slope (%): 0
 Subregion (LRR): Arid West Lat: 47° 8'42.88"N Long: 119°15'3.33"W Datum: _____
 Soil Map Unit Name: 94- Prosser-Starbuck very fine sandy loams. 0 - 15 % slopes NWI classification: PEM1C
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ☒ No ☐	Is the Sampled Area within a Wetland? Yes ☒ No ☐
Hydric Soil Present?	Yes ☒ No ☐	
Wetland Hydrology Present?	Yes ☒ No ☐	
Remarks:		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)															
1. _____	_____	_____	_____																
2. _____	_____	_____	_____																
3. _____	_____	_____	_____																
4. _____	_____	_____	_____																
50% = _____, 20% = _____	_____	= Total Cover																	
Sapling/Shrub Stratum (Plot size: _____)																			
1. <u>Elaeagnus angustifolia Russian-olive</u>	<u>10</u>	<u>yes</u>	<u>FAC</u>																
2. _____	_____	_____	_____																
3. _____	_____	_____	_____																
4. _____	_____	_____	_____																
5. _____	_____	_____	_____																
50% = _____, 20% = _____	<u>40</u>	= Total Cover																	
Herb Stratum (Plot size: _____)																			
1. <u>Trifolium hybridum - Alsike Clover</u>	<u>30</u>	<u>yes</u>	<u>FAC</u>																
2. <u>Juncus balticus Baltic rush</u>	<u>70</u>	<u>yes</u>	<u>FACW</u>																
3. _____	_____	_____	_____																
4. _____	_____	_____	_____																
5. _____	_____	_____	_____																
6. _____	_____	_____	_____																
7. _____	_____	_____	_____																
8. _____	_____	_____	_____																
50% = _____, 20% = _____	_____	= Total Cover																	
Woody Vine Stratum (Plot size: _____)																			
1. _____	_____	_____	_____																
2. _____	_____	_____	_____																
50% = _____, 20% = _____	_____	= Total Cover																	
% Bare Ground in Herb Stratum _____	% Cover of Biotic Crust _____																		
Prevalence Index worksheet: <table border="0"> <tr> <td><u>Total % Cover of :</u></td> <td><u>Multiply by:</u></td> </tr> <tr> <td>OBL species _____</td> <td>x1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x2 = _____</td> </tr> <tr> <td>FAC species _____</td> <td>x3 = _____</td> </tr> <tr> <td>FACU species _____</td> <td>x4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x5 = _____</td> </tr> <tr> <td>Column Totals: _____ (A)</td> <td>_____ (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = _____</td> </tr> </table>				<u>Total % Cover of :</u>	<u>Multiply by:</u>	OBL species _____	x1 = _____	FACW species _____	x2 = _____	FAC species _____	x3 = _____	FACU species _____	x4 = _____	UPL species _____	x5 = _____	Column Totals: _____ (A)	_____ (B)	Prevalence Index = B/A = _____	
<u>Total % Cover of :</u>	<u>Multiply by:</u>																		
OBL species _____	x1 = _____																		
FACW species _____	x2 = _____																		
FAC species _____	x3 = _____																		
FACU species _____	x4 = _____																		
UPL species _____	x5 = _____																		
Column Totals: _____ (A)	_____ (B)																		
Prevalence Index = B/A = _____																			
Hydrophytic Vegetation Indicators: ☒ Dominance Test is >50% ☐ Prevalence Index is ≤3.0 ¹ ☐ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ☐ 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 ☐																			
Remarks:																			

SOIL**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		
0-2	10YR 4/4	100	_____	_____	_____	_____	sandy loam	_____
2-6	10YR 4/2	90	10YR 3/6	10	C	M	sandy loam	_____
6-12	2.5YR 5/1	100	_____	_____	_____	_____	sandy loam	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____

¹Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- | | |
|--|--|
| ☐ Histosol (A1) | ☐ Sandy Redox (S5) |
| ☐ Histic Epipedon (A2) | ☐ Stripped Matrix (S6) |
| ☐ Black Histic (A3) | ☐ Loamy Mucky Mineral (F1) |
| ☐ Hydrogen Sulfide (A4) | ☐ Loamy Gleyed Matrix (F2) |
| ☐ Stratified Layers (A5) (LRR C) | ☒ Depleted Matrix (F3) |
| ☐ 1 cm Muck (A9) (LRR D) | ☐ Redox Dark Surface (F6) |
| ☐ Depleted Below Dark Surface (A11) | ☐ Depleted Dark Surface (F7) |
| ☐ Thick Dark Surface (A12) | ☐ Redox Depressions (F8) |
| ☐ Sandy Mucky Mineral (S1) | ☐ Vernal Pools (F9) |
| ☐ Sandy Gleyed Matrix (S4) | |

Indicators for Problematic Hydric Soils³:

- | |
|---|
| ☐ 1 cm Muck (A9) (LRR C) |
| ☐ 2 cm Muck (A10) (LRR B) |
| ☐ Reduced Vertic (F18) |
| ☐ Red Parent Material (TF2) |
| ☐ Other (Explain in Remarks) |

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if present):**

Type: _____

Depth (Inches): _____

Hydric Soils Present?Yes ☒ No ☐

Remarks: _____

HYDROLOGY**Wetland Hydrology Indicators:**

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

Secondary Indicators (2 or more required)

- | | | |
|--|--|---|
| ☐ Surface Water (A1) | ☐ Salt Crust (B11) | ☐ Water Marks (B1) (Riverine) |
| ☐ High Water Table (A2) | ☐ Biotic Crust (B12) | ☐ Sediment Deposits (B2) (Riverine) |
| ☐ Saturation (A3) | ☐ Aquatic Invertebrates (B13) | ☐ Drift Deposits (B3) (Riverine) |
| ☐ Water Marks (B1) (Nonriverine) | ☐ Hydrogen Sulfide Odor (C1) | ☒ Drainage Patterns (B10) |
| ☐ Sediment Deposits (B2) (Nonriverine) | ☐ Oxidized Rhizospheres along Living Roots (C3) | ☐ Dry-Season Water Table (C2) |
| ☐ Drift Deposits (B3) (Nonriverine) | ☐ Presence of Reduced Iron (C4) | ☐ Crayfish Burrows (C8) |
| ☐ Surface Soil Cracks (B6) | ☐ Recent Iron Reduction in Tilled Soils (C6) | ☒ Saturation Visible on Aerial Imagery (C9) |
| ☐ Inundation Visible on Aerial Imagery (B7) | ☐ Thin Muck Surface (C7) | ☐ Shallow Aquitard (D3) |
| ☐ Water-Stained Leaves (B9) | ☐ Other (Explain in Remarks) | ☐ FAC-Neutral Test (D5) |

Field Observations:Surface Water Present? Yes ☐ No ☒ Depth (inches): _____Water Table Present? Yes ☐ No ☒ Depth (inches): _____Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): _____**Wetland Hydrology Present?** Yes ☒ No ☐

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

Remarks: _____

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: Port of Moses Lake - Segment 1 City/County: Moses Lake/Grant Sampling Date: 5/18/2017
 Applicant/Owner: _____ State: WA Sampling Point: DP A10
 Investigator(s): SEP/ IDC Section, Township, Range: S13, T19N, R28E
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): none Slope (%): 0
 Subregion (LRR): Arid West Lat: 47° 8'42.71"N Long: 119°15'2.57"W Datum: _____
 Soil Map Unit Name: 94- Prosser-Starbuck very fine sandy loams. 0 - 15 % slopes NWI classification: PEM1C
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ☐ No ☒	Is the Sampled Area within a Wetland? Yes ☐ No ☒
Hydric Soil Present?	Yes ☐ No ☒	
Wetland Hydrology Present?	Yes ☐ No ☒	
Remarks:		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>33</u> (A/B)																																
1. _____	_____	_____	_____																																	
2. _____	_____	_____	_____																																	
3. _____	_____	_____	_____																																	
4. _____	_____	_____	_____																																	
50% = _____, 20% = _____	_____	= Total Cover																																		
Sapling/Shrub Stratum (Plot size: _____)																																				
1. _____	_____	_____	_____	Prevalence Index worksheet: <table border="0"> <tr> <td colspan="2"><u>Total % Cover of :</u></td> <td colspan="2"><u>Multiply by:</u></td> </tr> <tr> <td>OBL species</td> <td>_____</td> <td>x1 =</td> <td>_____</td> </tr> <tr> <td>FACW species</td> <td>_____</td> <td>x2 =</td> <td>_____</td> </tr> <tr> <td>FAC species</td> <td><u>50</u></td> <td>x3 =</td> <td><u>150</u></td> </tr> <tr> <td>FACU species</td> <td><u>30</u></td> <td>x4 =</td> <td><u>120</u></td> </tr> <tr> <td>UPL species</td> <td><u>20</u></td> <td>x5 =</td> <td><u>100</u></td> </tr> <tr> <td>Column Totals:</td> <td><u>100</u> (A)</td> <td></td> <td><u>370</u> (B)</td> </tr> <tr> <td colspan="4">Prevalence Index = B/A = <u>3.7</u></td> </tr> </table>	<u>Total % Cover of :</u>		<u>Multiply by:</u>		OBL species	_____	x1 =	_____	FACW species	_____	x2 =	_____	FAC species	<u>50</u>	x3 =	<u>150</u>	FACU species	<u>30</u>	x4 =	<u>120</u>	UPL species	<u>20</u>	x5 =	<u>100</u>	Column Totals:	<u>100</u> (A)		<u>370</u> (B)	Prevalence Index = B/A = <u>3.7</u>			
<u>Total % Cover of :</u>		<u>Multiply by:</u>																																		
OBL species	_____	x1 =	_____																																	
FACW species	_____	x2 =	_____																																	
FAC species	<u>50</u>	x3 =	<u>150</u>																																	
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UPL species	<u>20</u>	x5 =	<u>100</u>																																	
Column Totals:	<u>100</u> (A)		<u>370</u> (B)																																	
Prevalence Index = B/A = <u>3.7</u>																																				
2. _____	_____	_____	_____																																	
3. _____	_____	_____	_____																																	
4. _____	_____	_____	_____																																	
5. _____	_____	_____	_____																																	
50% = _____, 20% = _____	_____	= Total Cover																																		
Herb Stratum (Plot size: _____)																																				
1. <u>Thlaspi arvense- Field pennycress</u>	<u>20</u>	<u>yes</u>	<u>UPL</u>	Hydrophytic Vegetation Indicators: ☐ Dominance Test is >50% ☐ Prevalence Index is ≤3.0 ¹ ☐ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ☐ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																																
2. <u>Lolium perenne Perennial rye grass</u>	<u>10</u>	<u>yes</u>	<u>FAC</u>																																	
3. <u>Alopecurus arundinaceus - Creeping meadow foxtail</u>	<u>20</u>	<u>yes</u>	<u>FAC</u>																																	
4. <u>Hordeum jubatum - Fox-tail barley</u>	<u>20</u>	<u>yes</u>	<u>FAC</u>																																	
5. <u>Festuca idahoensis - Bluebunch fescue</u>	<u>30</u>	<u>yes</u>	<u>FACU</u>																																	
6. _____	_____	_____	_____																																	
7. _____	_____	_____	_____																																	
8. _____	_____	_____	_____																																	
50% = _____, 20% = _____	<u>100</u>	= Total Cover																																		
Woody Vine Stratum (Plot size: _____)																																				
1. _____	_____	_____	_____																																	
2. _____	_____	_____	_____																																	
50% = _____, 20% = _____	_____	= Total Cover																																		
% Bare Ground in Herb Stratum _____	% Cover of Biotic Crust _____																																			
Hydrophytic Vegetation Present? Yes ☐ No ☒																																				
Remarks:																																				

SOIL**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		
0-2	10YR 3/2	100	_____	_____	_____	_____	sandy loam	_____
2-8	10YR 4/3	90	10YR 5/6	10	_____	_____	Sandy loam	_____
8-12	10YR 3/3	90	10YR 3/6	10	_____	_____	Sandy loam	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____

¹Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- | | |
|--|---|
| ☐ Histosol (A1) | ☐ Sandy Redox (S5) |
| ☐ Histic Epipedon (A2) | ☐ Stripped Matrix (S6) |
| ☐ Black Histic (A3) | ☐ Loamy Mucky Mineral (F1) |
| ☐ Hydrogen Sulfide (A4) | ☐ Loamy Gleyed Matrix (F2) |
| ☐ Stratified Layers (A5) (LRR C) | ☐ Depleted Matrix (F3) |
| ☐ 1 cm Muck (A9) (LRR D) | ☐ Redox Dark Surface (F6) |
| ☐ Depleted Below Dark Surface (A11) | ☐ Depleted Dark Surface (F7) |
| ☐ Thick Dark Surface (A12) | ☐ Redox Depressions (F8) |
| ☐ Sandy Mucky Mineral (S1) | ☐ Vernal Pools (F9) |
| ☐ Sandy Gleyed Matrix (S4) | |

Indicators for Problematic Hydric Soils³:

- | |
|---|
| ☐ 1 cm Muck (A9) (LRR C) |
| ☐ 2 cm Muck (A10) (LRR B) |
| ☐ Reduced Vertic (F18) |
| ☐ Red Parent Material (TF2) |
| ☐ Other (Explain in Remarks) |

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if present):**

Type: _____

Depth (Inches): _____

Hydric Soils Present?Yes ☐ No ☒

Remarks:

HYDROLOGY**Wetland Hydrology Indicators:**

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

- | | |
|--|--|
| ☐ Surface Water (A1) | ☐ Salt Crust (B11) |
| ☐ High Water Table (A2) | ☐ Biotic Crust (B12) |
| ☐ Saturation (A3) | ☐ Aquatic Invertebrates (B13) |
| ☐ Water Marks (B1) (Nonriverine) | ☐ Hydrogen Sulfide Odor (C1) |
| ☐ Sediment Deposits (B2) (Nonriverine) | ☐ Oxidized Rhizospheres along Living Roots (C3) |
| ☐ Drift Deposits (B3) (Nonriverine) | ☐ Presence of Reduced Iron (C4) |
| ☐ Surface Soil Cracks (B6) | ☐ Recent Iron Reduction in Tilled Soils (C6) |
| ☐ Inundation Visible on Aerial Imagery (B7) | ☐ Thin Muck Surface (C7) |
| ☐ Water-Stained Leaves (B9) | ☐ Other (Explain in Remarks) |

Secondary Indicators (2 or more required)

- | |
|--|
| ☐ Water Marks (B1) (Riverine) |
| ☐ Sediment Deposits (B2) (Riverine) |
| ☐ Drift Deposits (B3) (Riverine) |
| ☐ Drainage Patterns (B10) |
| ☐ Dry-Season Water Table (C2) |
| ☐ Crayfish Burrows (C8) |
| ☐ Saturation Visible on Aerial Imagery (C9) |
| ☐ Shallow Aquitard (D3) |
| ☐ FAC-Neutral Test (D5) |

Field Observations:Surface Water Present? Yes ☐ No ☒ Depth (inches): _____Water Table Present? Yes ☐ No ☒ Depth (inches): _____Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): _____**Wetland Hydrology Present?**Yes ☐ No ☒

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: Port of Moses Lake - Segment 1 City/County: Moses Lake/Grant Sampling Date: 5/18/2017
 Applicant/Owner: _____ State: WA Sampling Point: DP -A11
 Investigator(s): SEP/ IDC Section, Township, Range: S13, T19N, R28E
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): concave Slope (%): 0
 Subregion (LRR): Arid West Lat: 47° 8'41.63"N Long: 119°14'58.38"W Datum: _____
 Soil Map Unit Name: 77-Malaga stony sandy loam, 0-15% slopes NWI classification: PEM1C
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ☒ No ☐	Is the Sampled Area within a Wetland? Yes ☒ No ☐
Hydric Soil Present?	Yes ☒ No ☐	
Wetland Hydrology Present?	Yes ☒ No ☐	
Remarks:		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)																
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
50% = _____, 20% = _____	_____	= Total Cover																		
Sapling/Shrub Stratum (Plot size: _____)				Prevalence Index worksheet: <table border="0"> <tr> <td><u>Total % Cover of :</u></td> <td><u>Multiply by:</u></td> </tr> <tr> <td>OBL species _____</td> <td>x1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x2 = _____</td> </tr> <tr> <td>FAC species _____</td> <td>x3 = _____</td> </tr> <tr> <td>FACU species _____</td> <td>x4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x5 = _____</td> </tr> <tr> <td>Column Totals: _____ (A)</td> <td>_____ (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = _____</td> </tr> </table>	<u>Total % Cover of :</u>	<u>Multiply by:</u>	OBL species _____	x1 = _____	FACW species _____	x2 = _____	FAC species _____	x3 = _____	FACU species _____	x4 = _____	UPL species _____	x5 = _____	Column Totals: _____ (A)	_____ (B)	Prevalence Index = B/A = _____	
<u>Total % Cover of :</u>	<u>Multiply by:</u>																			
OBL species _____	x1 = _____																			
FACW species _____	x2 = _____																			
FAC species _____	x3 = _____																			
FACU species _____	x4 = _____																			
UPL species _____	x5 = _____																			
Column Totals: _____ (A)	_____ (B)																			
Prevalence Index = B/A = _____																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
50% = _____, 20% = _____	_____	= Total Cover																		
Herb Stratum (Plot size: _____)				Hydrophytic Vegetation Indicators: ☒ Dominance Test is >50% ☐ Prevalence Index is ≤3.0 ¹ ☐ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ☐ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
1. <u>Trifolium hybridum - Alsike Clover</u>	<u>30</u>	<u>yes</u>	<u>FAC</u>																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
50% = _____, 20% = _____	_____	= Total Cover																		
Woody Vine Stratum (Plot size: _____)				Hydrophytic Vegetation Present? Yes ☒ No ☐																
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
50% = _____, 20% = _____	_____	= Total Cover																		
% Bare Ground in Herb Stratum _____	% Cover of Biotic Crust _____																			
Remarks: <u>Grazed clover in a spring area on slope near vehicle parking area.</u>																				

SOILSampling Point: DP-A11**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type ¹	Loc ²		
0-6	10YR 3/2	100	_____	_____	_____	_____	sandy loam	_____
6-15	5Y 4/1	85	10YR 4/6	15	C	M	sandy loam	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____

¹Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- | | |
|--|--|
| ☐ Histosol (A1) | ☐ Sandy Redox (S5) |
| ☐ Histic Epipedon (A2) | ☐ Stripped Matrix (S6) |
| ☐ Black Histic (A3) | ☐ Loamy Mucky Mineral (F1) |
| ☐ Hydrogen Sulfide (A4) | ☐ Loamy Gleyed Matrix (F2) |
| ☐ Stratified Layers (A5) (LRR C) | ☒ Depleted Matrix (F3) |
| ☐ 1 cm Muck (A9) (LRR D) | ☐ Redox Dark Surface (F6) |
| ☐ Depleted Below Dark Surface (A11) | ☐ Depleted Dark Surface (F7) |
| ☐ Thick Dark Surface (A12) | ☐ Redox Depressions (F8) |
| ☐ Sandy Mucky Mineral (S1) | ☐ Vernal Pools (F9) |
| ☐ Sandy Gleyed Matrix (S4) | |

Indicators for Problematic Hydric Soils³:

- | |
|---|
| ☐ 1 cm Muck (A9) (LRR C) |
| ☐ 2 cm Muck (A10) (LRR B) |
| ☐ Reduced Vertic (F18) |
| ☐ Red Parent Material (TF2) |
| ☐ Other (Explain in Remarks) |

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if present):**

Type: _____

Depth (Inches): _____

Hydric Soils Present?Yes ☒ No ☐

Remarks: _____

HYDROLOGY**Wetland Hydrology Indicators:**

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

Secondary Indicators (2 or more required)

- | | | |
|--|--|---|
| ☐ Surface Water (A1) | ☐ Salt Crust (B11) | ☐ Water Marks (B1) (Riverine) |
| ☐ High Water Table (A2) | ☐ Biotic Crust (B12) | ☐ Sediment Deposits (B2) (Riverine) |
| ☐ Saturation (A3) | ☐ Aquatic Invertebrates (B13) | ☐ Drift Deposits (B3) (Riverine) |
| ☐ Water Marks (B1) (Nonriverine) | ☐ Hydrogen Sulfide Odor (C1) | ☒ Drainage Patterns (B10) |
| ☐ Sediment Deposits (B2) (Nonriverine) | ☐ Oxidized Rhizospheres along Living Roots (C3) | ☐ Dry-Season Water Table (C2) |
| ☐ Drift Deposits (B3) (Nonriverine) | ☐ Presence of Reduced Iron (C4) | ☐ Crayfish Burrows (C8) |
| ☐ Surface Soil Cracks (B6) | ☐ Recent Iron Reduction in Tilled Soils (C6) | ☒ Saturation Visible on Aerial Imagery (C9) |
| ☐ Inundation Visible on Aerial Imagery (B7) | ☐ Thin Muck Surface (C7) | ☐ Shallow Aquitard (D3) |
| ☐ Water-Stained Leaves (B9) | ☐ Other (Explain in Remarks) | ☐ FAC-Neutral Test (D5) |

Field Observations:Surface Water Present? Yes ☐ No ☒ Depth (inches): _____Water Table Present? Yes ☐ No ☒ Depth (inches): _____Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): _____**Wetland Hydrology Present?** Yes ☒ No ☐

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

Remarks: _____

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: Port of Moses Lake - Segment 1 City/County: Moses Lake/Grant Sampling Date: 5/18/2017
 Applicant/Owner: _____ State: WA Sampling Point: DP-A12
 Investigator(s): SEP/ IDC Section, Township, Range: S13, T19N, R28E
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): none Slope (%): 0
 Subregion (LRR): Arid West Lat: 47° 8'42.71"N Long: 119°15'2.57"W Datum: _____
 Soil Map Unit Name: 77-Malaga stony sandy loam, 0-15% slopes NWI classification: PEM1C
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ☐ No ☒	Is the Sampled Area within a Wetland? Yes ☐ No ☒
Hydric Soil Present?	Yes ☐ No ☒	
Wetland Hydrology Present?	Yes ☐ No ☒	
Remarks:		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>33</u> (A/B)																
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
50% = _____, 20% = _____	_____	= Total Cover																		
Sapling/Shrub Stratum (Plot size: _____)																				
1. <u>Artemisia ludoviciana - white sagebrush</u>	<u>40</u>	<u>yes</u>	<u>FACU</u>	Prevalence Index worksheet: <table border="0"> <tr> <td><u>Total % Cover of :</u></td> <td><u>Multiply by:</u></td> </tr> <tr> <td>OBL species _____</td> <td>x1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x2 = _____</td> </tr> <tr> <td>FAC species _____</td> <td>x3 = <u>150</u></td> </tr> <tr> <td>FACU species _____</td> <td>x4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x5 = _____</td> </tr> <tr> <td>Column Totals: _____ (A)</td> <td>_____ (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = _____</td> </tr> </table>	<u>Total % Cover of :</u>	<u>Multiply by:</u>	OBL species _____	x1 = _____	FACW species _____	x2 = _____	FAC species _____	x3 = <u>150</u>	FACU species _____	x4 = _____	UPL species _____	x5 = _____	Column Totals: _____ (A)	_____ (B)	Prevalence Index = B/A = _____	
<u>Total % Cover of :</u>	<u>Multiply by:</u>																			
OBL species _____	x1 = _____																			
FACW species _____	x2 = _____																			
FAC species _____	x3 = <u>150</u>																			
FACU species _____	x4 = _____																			
UPL species _____	x5 = _____																			
Column Totals: _____ (A)	_____ (B)																			
Prevalence Index = B/A = _____																				
2. <u>Artemisia campestris - Pacific wormwood</u>	<u>20</u>	<u>yes</u>	<u>UPL</u>																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
50% = _____, 20% = _____	_____	= Total Cover																		
Herb Stratum (Plot size: _____)																				
1. <u>Thlaspi arvense- Field pennycress</u>	_____	_____	_____	Hydrophytic Vegetation Indicators: ☐ Dominance Test is >50% ☐ Prevalence Index is ≤3.0 ¹ ☐ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ☐ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
50% = _____, 20% = _____	_____	= Total Cover																		
Woody Vine Stratum (Plot size: _____)																				
1. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes ☐ No ☒																
2. _____	_____	_____	_____																	
50% = _____, 20% = _____	_____	= Total Cover																		
% Bare Ground in Herb Stratum _____	% Cover of Biotic Crust _____																			
Remarks:																				

SOIL**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		
0-2	10YR 3/2	100	_____	_____	_____	_____	Sandy loam	_____
2-5	10YR 3/3	100	_____	_____	_____	_____	Sandy loam	_____
5-12	10YR 3/4	100	_____	_____	_____	_____	Sandy loam	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____

¹Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- | | |
|--|---|
| ☐ Histosol (A1) | ☐ Sandy Redox (S5) |
| ☐ Histic Epipedon (A2) | ☐ Stripped Matrix (S6) |
| ☐ Black Histic (A3) | ☐ Loamy Mucky Mineral (F1) |
| ☐ Hydrogen Sulfide (A4) | ☐ Loamy Gleyed Matrix (F2) |
| ☐ Stratified Layers (A5) (LRR C) | ☐ Depleted Matrix (F3) |
| ☐ 1 cm Muck (A9) (LRR D) | ☐ Redox Dark Surface (F6) |
| ☐ Depleted Below Dark Surface (A11) | ☐ Depleted Dark Surface (F7) |
| ☐ Thick Dark Surface (A12) | ☐ Redox Depressions (F8) |
| ☐ Sandy Mucky Mineral (S1) | ☐ Vernal Pools (F9) |
| ☐ Sandy Gleyed Matrix (S4) | |

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR C)**
- ☐ 2 cm Muck (A10) **(LRR B)**
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if present):**

Type: _____

Depth (Inches): _____

Hydric Soils Present?Yes ☐ No ☒

Remarks:

HYDROLOGY**Wetland Hydrology Indicators:**

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

Secondary Indicators (2 or more required)

- | | | |
|--|--|--|
| ☐ Surface Water (A1) | ☐ Salt Crust (B11) | ☐ Water Marks (B1) (Riverine) |
| ☐ High Water Table (A2) | ☐ Biotic Crust (B12) | ☐ Sediment Deposits (B2) (Riverine) |
| ☐ Saturation (A3) | ☐ Aquatic Invertebrates (B13) | ☐ Drift Deposits (B3) (Riverine) |
| ☐ Water Marks (B1) (Nonriverine) | ☐ Hydrogen Sulfide Odor (C1) | ☐ Drainage Patterns (B10) |
| ☐ Sediment Deposits (B2) (Nonriverine) | ☐ Oxidized Rhizospheres along Living Roots (C3) | ☐ Dry-Season Water Table (C2) |
| ☐ Drift Deposits (B3) (Nonriverine) | ☐ Presence of Reduced Iron (C4) | ☐ Crayfish Burrows (C8) |
| ☐ Surface Soil Cracks (B6) | ☐ Recent Iron Reduction in Tilled Soils (C6) | ☐ Saturation Visible on Aerial Imagery (C9) |
| ☐ Inundation Visible on Aerial Imagery (B7) | ☐ Thin Muck Surface (C7) | ☐ Shallow Aquitard (D3) |
| ☐ Water-Stained Leaves (B9) | ☐ Other (Explain in Remarks) | ☐ FAC-Neutral Test (D5) |

Field Observations:Surface Water Present? Yes ☐ No ☒ Depth (inches): _____Water Table Present? Yes ☐ No ☒ Depth (inches): _____Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): _____**Wetland Hydrology Present?** Yes ☐ No ☒

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

Remarks:

RATING SUMMARY – Eastern Washington

Name of wetland (or ID #): Wetland C Date of site visit: 5/17/2017

Rated by Sue Platte Trained by Ecology? ☒ Yes ☐ No Date of training 5/9/2014

HGM Class used for rating Riverine 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 Pro

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

1. Category of wetland based on FUNCTIONS

 Category I - Total score = 22 - 27
 X Category II - Total score = 19 - 21
 Category III - Total score = 16 - 18
 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	H	M	
Landscape Potential	H	L	M	
Value	M	M	H	Total
Score Based on Ratings	7	6	7	20

2. Category based on SPECIAL CHARACTERISTICS of wetland

CHARACTERISTIC	Category
Vernal Pools	
Alkali	
Wetland of High Conservation Value	
Bog and Calcareous Fens	
Old Growth or Mature Forest - slow growing	
Aspen Forest	
Old Growth or Mature Forest - fast growing	
Floodplain forest	II
None of the above	

Maps and Figures required to answer questions correctly for Eastern Washington

Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes and classes of emergents	D 1.3, H 1.1, H 1.5	
Hydroperiods (including area of open water for H 1.3)	D 1.4, H 1.2, H 1.3	
Location of outlet (<i>can be added to map of hydroperiods</i>)	D 1.1, D 4.1	
Boundary of area within 150 ft of the wetland (<i>can be added to another figure</i>)	D 2.2, D 5.2	
Map of the contributing basin	D 5.3	
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)	D 3.1, D 3.2	
Screen capture of list of TMDLs for WRIA in which wetland is found (website)	D 3.3	

Riverine Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes and classes of emergents	H 1.1, H 1.5	
Hydroperiods	H 1.2, H 1.3	
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	
Map of the contributing basin	R 2.2, R 2.3, R 5.2	
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	
Width of wetland vs. width of stream (<i>can be added to another figure</i>)	R 4.1	
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)	R 3.1	
Screen capture of list of TMDLs for WRIA in which wetland is found (website)	R 3.2, R 3.3	

Lake Fringe Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes and classes of emergents	L 1.1, L 4.1, H 1.1, H 1.5	
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 wetland is found (website)	L 3.3	

Slope Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes and classes of emergents	H 1.1, H 1.5	
Hydroperiods	H 1.2, H 1.3	
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 figure above</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 wetland is found (website)	S 3.3	

HGM Classification of Wetland in Eastern Washington

For questions 1 - 4, the criteria described must apply to the entire unit being rated.

If the 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 - 4 apply, and go to Question 5.

1. Does the entire unit **meet both** of the following criteria?

- ☐ The vegetated part of the wetland is on the water side of the Ordinary High Water Mark of a body of permanent open water (without any plants on the surface) that is at least 20 ac (8 ha) in size
- ☐ At least 30% of the open water area is deeper than 10 ft (3 m)

☒ NO - go to 2

☐ YES - The wetland class is **Lake Fringe** (Lacustrine Fringe)

2. 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 3

☐ 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 foot deep).

3. 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 10 years.

☐ NO - go to 4

☒ YES - The wetland class is **Riverine**

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

4. 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 5

☐ YES - The wetland class is **Depressional**

5. 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 - 4 APPLY TO DIFFERENT AREAS IN THE WETLAND 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 (the riverine portion is within the boundary of depression)	Depressional
Depressional + Lake Fringe	Depressional
Riverine + Lake Fringe	Riverine

*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:

RIVERINE WETLANDS		Points (only 1 score per box)
Water Quality Functions - Indicators that the site functions to improve water quality		
R 1.0. Does the site have the potential to improve water quality?		
R 1.1. Area of surface depressions within the Riverine wetland that can trap sediments during a flooding event:		
Depressions cover $> \frac{1}{3}$ area of wetland	points = 6	6
Depressions cover $> \frac{1}{10}$ area of wetland	points = 3	
Depressions present but cover $< \frac{1}{10}$ area of wetland	points = 1	
No depressions present	points = 0	
R 1.2. Structure of plants in the wetland (areas with $> 90\%$ cover at person height; not Cowardin classes):		
Forest or shrub $> \frac{2}{3}$ the area of the wetland	points = 10	5
☒ Forest or shrub $\frac{1}{3} - \frac{2}{3}$ area of the wetland	points = 5	
☐ Ungrazed, herbaceous plants $> \frac{2}{3}$ area of wetland	points = 5	
Ungrazed herbaceous plants $\frac{1}{3} - \frac{2}{3}$ area of wetland	points = 2	
Forest, shrub, and ungrazed herbaceous $< \frac{1}{3}$ area of wetland	points = 0	
Total for R 1	Add the points in the boxes above	11

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

R 2.0. Does the landscape have the potential to support the water quality function of the site?		
R 2.1. Is the wetland within an incorporated city or within its UGA?	Yes = 2 No = 0	2
R 2.2. Does the contributing basin to the wetland include a UGA or incorporated area?	Yes = 1 No = 0	1
R 2.3. Does at least 10% of the contributing basin contain tilled fields, pastures, or forests that have been clearcut within the last 5 years?	Yes = 1 No = 0	1
R 2.4. Is $> 10\%$ of the area within 150 ft of the wetland in land uses that generate pollutants?	Yes = 1 No = 0	1
R 2.5. Are there other sources of pollutants coming into the wetland that are not listed in questions R 2.1 - R 2.4?		1
Sources	Yes = 1 No = 0	
Total for R 2	Add the points in the boxes above	6

Rating of Landscape Potential If score is: ☒ 3 - 6 = H ☐ 1 or 2 = M ☐ 0 = L Record the rating on the first page

R 3.0. Is the water quality improvement provided by the site valuable to society?		
R 3.1. Is the wetland along a stream or river that is on the 303(d) list or on a tributary that drains to one within 1 mi?	Yes = 1 No = 0	1
R 3.2. Does the river or stream have TMDL limits for nutrients, toxics, or pathogens?	Yes = 1 No = 0	0
R 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 drainage in which the unit is found).	Yes = 2 No = 0	0
Total for R 3	Add the points in the boxes above	1

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

RIVERINE WETLANDS		Points (only 1 score per box)
Hydrologic Functions - Indicators that site functions to reduce flooding and stream erosion		
R 4.0. Does the site have the potential to reduce flooding and erosion?		
R 4.1. Characteristics of the overbank storage the wetland provides: <i>Estimate the average width of the wetland perpendicular to the direction of the flow and the width of the stream or river channel (distance between banks). Calculate the ratio: (average width of wetland)/(average width of stream between banks).</i>		8
If the ratio is more than 2	points = 10	
If the ratio is 1 - 2	points = 8	
If the ratio is $\frac{1}{2}$ - < 1	points = 4	
If the ratio is $\frac{1}{4}$ - < $\frac{1}{2}$	points = 2	
If the ratio is < $\frac{1}{4}$	points = 1	
R 4.2. Characteristics of plants that slow down water velocities during floods: <i>Treat large woody debris as forest or shrub. Choose the points appropriate for the best description (polygons need to have > 90% cover at person height. These are NOT Cowardin classes).</i>		4
Forest or shrub for more than $\frac{2}{3}$ the area of the wetland	points = 6	
Forest or shrub for > $\frac{1}{3}$ area OR emergent plants > $\frac{2}{3}$ area	points = 4	
Forest or shrub for > $\frac{1}{10}$ area OR emergent plants > $\frac{1}{3}$ area	points = 2	
Plants do not meet above criteria	points = 0	
Total for R 4		12

Rating of Site Potential If score is: ☒ 12 - 16 = H ☐ 6 - 11 = M ☐ 0 - 5 = L

Record the rating on the first page

R 5.0. Does the landscape have the potential to support the hydrologic functions of the site?		
R 5.1. Is the stream or river adjacent to the wetland downcut?	Yes = 0 No = 1	
R 5.2. Does the up-gradient watershed include a UGA or incorporated area?	Yes = 1 No = 0	
R 5.3. Is the up-gradient stream or river controlled by dams?	Yes = 0 No = 1	
Total for R 5		0

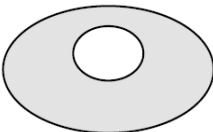
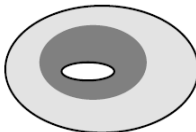
Rating of Landscape Potential If score is: ☐ 3 = H ☐ 1 or 2 = M ☒ 0 = L

Record the rating on the first page

R 6.0. Are the hydrologic functions provided by the site valuable to society?		
R 6.1. Distance to the nearest areas downstream that have flooding problems? <i>Choose the description that best fits the site.</i>		1
The sub-basin immediately down-gradient of the site has flooding problems that result in damage to human or natural resources	points = 2	
Surface flooding problems are in a sub-basin farther down-gradient	points = 1	
No flooding problems anywhere downstream	points = 0	
R 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan?		0
Yes = 2 No = 0		
Total for R 6		1

Rating of Value If score is: ☐ 2 - 4 = H ☒ 1 = M ☐ 0 = L

Record the rating on the first page

These questions apply to wetlands of all HGM classes.		(only 1 score per box)
HABITAT FUNCTIONS - Indicators that site functions to provide important habitat		
H 1.0. Does the wetland have the potential to provide habitat for many species?		
H 1.1. Structure of plant community: <i>Check the Cowardin vegetation classes present and categories of emergent plants. Size threshold for each category is $\geq \frac{1}{4}$ ac or $\geq 10\%$ of the wetland if wetland is < 2.5 ac.</i>		2
☐ Aquatic bed ☐ Emergent plants 0 - 12 in (0-30 cm) high are the highest layer and have $> 30\%$ cover ☐ Emergent plants $> 12 - 40$ in ($> 30-100$ cm) high are the highest layer with $> 30\%$ cover ☐ Emergent plants > 40 in (> 100 cm) high are the highest layer with $> 30\%$ cover ☐ Scrub-shrub (areas where shrubs have $> 30\%$ cover) ☐ Forested (areas where trees have $> 30\%$ cover)		
4 or more checks: points = 3 3 checks: points = 2 2 checks: points = 1 1 check: points = 0		
H 1.2. Is one of the vegetation types Aquatic Bed? Yes = 1 No = 0		
H 1.3. <u>Surface water</u>		
H 1.3.1. Does the wetland have areas of open water (without emergent or shrub plants) over at least $\frac{1}{4}$ ac OR 10% of its area during the March to early June OR in August to the end of September? Answer YES for Lake Fringe wetlands. ☐ Yes = 3 points & go to H 1.4 No = go to H 1.3.2		3
H 1.3.2. Does the wetland have an intermittent or permanent, and unvegetated stream within its boundaries, or along one side, over at least $\frac{1}{4}$ ac or 10% of its area? Answer yes only if H 1.3.1 is No. ☐ Yes = 3 No = 0		
H 1.4. <u>Richness of plant species</u> Count the number of plant species in the wetland that cover at least 10 ft^2 . <i>Different patches of the same species can be combined to meet the size threshold. You do not have to name the species. Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Russian olive, Phragmites, Canadian thistle, yellow-flag iris, and saltcedar (Tamarisk)</i> # of species <u>6</u>		2
Scoring: > 9 species: points = 2 4 - 9 species: points = 1 < 4 species: points = 0		
H 1.4. <u>Interspersion of habitats</u> Decide from the diagrams below whether interspersions among types of plant structures (described in H 1.1), and unvegetated areas (open water or mudflats) is high, moderate, low, or none. Use map of Cowardin and emergent plant classes prepared for questions H 1.1 and map of open water from H 1.3. If you have four or more plant classes or three classes and open water, the rating is always high.		3
   		
None = 0 points Low = 1 point Moderate = 2 points		
All three diagrams in this row are HIGH = 3 points		
  		
Riparian braided channels with 2 classes		

H 1.6. Special habitat features: <i>Check the habitat features that are present in the wetland. The number of checks is the number of points.</i>			
☐ Loose rocks larger than 4 in OR large, downed, woody debris (> 4 in diameter) within the area of surface ponding or in stream. ☒ Cattails or bulrushes are present within the wetland. ☐ Standing snags (diameter at the bottom > 4 in) in the wetland or within 30 m (100 ft) of the edge ☒ Emergent or shrub vegetation in areas that are permanently inundated/ponded. ☒ Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 45 degree slope) OR signs of recent beaver activity ☐ Invasive species cover less than 20% in each stratum of vegetation (<i>canopy, sub-canopy, shrubs, herbaceous, moss/ground cover</i>)	2		
Total for H 1		Add the points in the boxes above	12

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 habitat functions of the site?			
H 2.1 Accessible habitat (only area of habitat abutting wetland). If total accessible habitat is: <i>Calculate:</i> 50 % undisturbed habitat + (_____ 10 % moderate & low intensity land uses / 2) = 55% > 1/3 (33.3%) of 1 km Polygon 20 - 33% of 1 km Polygon 10 - 19% of 1 km Polygon < 10 % of 1 km Polygon points = 3 points = 2 points = 1 points = 0			3
H 2.2. Undisturbed habitat in 1 km Polygon around wetland. <i>Calculate:</i> 20 % undisturbed habitat + (_____ 20 % moderate & low intensity land uses / 2) = 30% Undisturbed habitat > 50% of Polygon Undisturbed habitat 10 - 50% and in 1 - 3 patches Undisturbed habitat 10 - 50% and > 3 patches Undisturbed habitat < 10% of 1 km Polygon points = 3 points = 2 points = 1 points = 0			1
H 2.3 Land use intensity in 1 km Polygon: > 50% of 1 km Polygon is high intensity land use points = (-2) Does not meet criterion above points = 0			-2
H 2.4. The wetland is in an area where annual rainfall is less than 12 in, and its water regime is not influenced by irrigation practices, dams, or water control structures. <i>Generally, this means outside boundaries of reclamation areas, irrigation districts, or reservoirs</i> Yes = 3 No = 0			0
Total for H 2		Add the points in the boxes above	2

Rating of Landscape Potential If Score is: ☐ 4 - 9 = 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? <i>Choose only the highest score that applies to the wetland being rated.</i> Site meets ANY of the following criteria: points = 2 ☐ It has 3 or more priority habitats within 100 m (see Appendix B) ☐ It provides habitat for Threatened or Endangered species (any plant or animal on state or federal lists) ☐ It is mapped as a location for an individual WDFW species ☐ It is a Wetland of High Conservation Value as determined by the Department of Natural Resources ☒ 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 Site has 1 or 2 priority habitats within 100 m (see Appendix B) points = 1 Site does not meet any of the criteria above points = 0 2		

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

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate category.

NOTE: A wetland may meet the criteria for more than one set of special characteristics. Record all those that apply. NOTE: All wetlands should also be characterized based on their functions.

Wetland Type	Category	
<i>Check off any criteria that apply to the wetland. List the category when the appropriate criteria are met.</i>		
SC 1.0. Vernal Pools Is the wetland less than 4000 ft² , and does it meet at least two of the following criteria? ☐ Its only source of water is rainfall or snowmelt from a small contributing basin and has no groundwater input. ☐ Wetland plants are typically present only in the spring; the summer vegetation is typically upland annuals. <i>If you find perennial, obligate, wetland plants, the wetland is probably NOT a vernal pool.</i> ☐ The soil in the wetland is shallow [< 1 ft (30 cm) deep] and is underlain by an impermeable layer such as basalt or clay. ☐ Surface water is present for less than 120 days during the wet season. ☐ Yes - Go to SC 1.1 ☒ No = Not vernal pool	1	
SC 1.1. Is the vernal pool relatively undisturbed in February and March? ☐ Yes – Go to SC 1.2 ☐ No = Not a vernal pool with special characteristics		
SC 1.2. Is the vernal pool in an area where there are at least 3 separate aquatic resources within 0.5 mi (other wetlands, rivers, lakes etc.)? ☐ Yes = Category II ☐ No = Category III		
SC 2.0. Alkali wetlands Does the wetland meet one of the following criteria? ☐ The wetland has a conductivity > 3.0 mS/cm. ☐ The wetland has a conductivity between 2.0 and 3.0 mS, and more than 50% of the plant cover in the wetland can be classified as “alkali” species (see Table 4 for list of plants found in alkali systems). ☐ If the wetland is dry at the time of your field visit, the central part of the area is covered with a layer of salt. OR does the wetland unit meet two of the following three sub-criteria? ☐ Salt encrustations around more than 75% of the edge of the wetland ☐ More than $\frac{3}{4}$ of the plant cover consists of species listed on Table 4 ☐ A pH above 9.0. All alkali wetlands have a high pH, but please note that some freshwater wetlands may also have a high pH. Thus, pH alone is not a good indicator of alkali wetlands. ☐ Yes = Category I ☒ No = Not an alkali wetland	2	
SC 3.0. Wetlands of High Conservation Value (WHCV)		
SC 3.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? ☒ Yes - Go to SC 3.2 ☐ No - Go to SC 3.3 SC 3.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? ☐ Yes = Category I ☒ No = Not WHCV SC 3.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf ☐ Yes - Contact WNHP/WDNR and to SC 3.4 ☒ No = Not WHCV SC 3.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website? ☐ Yes = Category I ☐ No = Not WHCV		

SC 4.0. Bogs and Calcareous Fens <i>Does the wetland (or any part of the wetland unit) meet both the criteria for soils and vegetation in bogs or calcareous fens? Use the key below to identify if the wetland is a bog or calcareous fen. If you answer yes you will still need to rate the wetland based on its functions.</i> SC 4.1. Does an area within the wetland have organic soil horizons (i.e., layers of organic soil), either peats or mucks, that compose 16 in or more of the first 32 in of the soil profile? <i>See Appendix C for a field key to identify organic soils.</i> ☐ Yes - Go to SC 4.3 ☒ No - Go to SC 4.2 SC 4.2. Does an area within the wetland 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? ☐ Yes - Go to SC 4.3 ☒ No = Is not a bog for rating SC 4.3. Does an area within the wetland have more than 70% cover of mosses at ground level AND at least 30% of the total plant cover consists of species in Table 5? ☐ Yes = Category I bog ☐ No - Go to SC 4.4 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 5 are present, the wetland is a bog. SC 4.4. Is an area with peats or mucks forested (> 30% cover) with 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 5 provide more than 30% of the cover under the canopy? ☐ Yes = Category I bog ☐ No - Go to SC 4.5 SC 4.5. Do the species listed in Table 6 comprise at least 20% of the total plant cover within an area of peats and mucks? ☐ Yes = Is a Calcareous Fen for purpose of rating ☒ No - Go to SC 4.6 SC 4.6. Do the species listed in Table 6 comprise at least 10% of the total plant cover in an area of peats and mucks, AND one of the two following conditions is met: ☐ Marl deposits [calcium carbonate (CaCO₃) precipitate] occur on the soil surface or plant stems ☐ The pH of free water is ≥ 6.8 AND electrical conductivity is ≥ 200 uS/cm at multiple locations within the wetland ☐ Yes = Is a Category I calcareous fen ☒ No = Is not a calcareous fen	
SC 5.0. Forested Wetlands <i>Does the wetland have an area of forest rooted within its boundary that meets at least one of the following three criteria? (Continue only if you have identified that a forested class is present in question H)</i> ☒ The wetland is within the 100 year floodplain of a river or stream ☐ Aspen (<i>Populus tremuloides</i>) represents at least 20% of the total cover of woody species ☐ There is at least ¼ ac of trees (even in wetlands smaller than 2.5 ac) that are “mature” or “old-growth” according to the definitions for these priority habitats developed by WDFW (see definitions in question H3.1) ☒ Yes - Go to SC 5.1 ☐ No = Not a forested wetland with special characteristics SC 5.1. Does the wetland have a forest canopy where more than 50% of the tree species (by cover) are slow growing native trees (see Table 7)? ☐ Yes = Category I ☒ No - Go to SC 5.2 SC 5.2. Does the wetland have areas where aspen (<i>Populus tremuloides</i>) represents at least 20% of the total cover of woody species? ☐ Yes = Category I ☒ No - Go to SC 5.3 SC 5.3. Does the wetland have at least ¼ acre with a forest canopy where more than 50% of the tree species (by cover) are fast growing species (see Table 7)? ☐ Yes = Category II ☒ No - Go to SC 5.4 SC 5.4. Is the forested component of the wetland within the 100 year floodplain of a river or stream? ☒ Yes = Category II ☐ No = Not a forested wetland with special characteristics	
Category of wetland based on Special Characteristics <i>Choose the highest rating if wetland falls into several categories</i> If you answered No for all types, enter “Not Applicable” on Summary Form	Cat. II

Appendix B: WDFW Priority Habitats in Eastern Washington

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*).
- ☐ **Old-growth/Mature forests:** Old-growth east of Cascade crest – Stands are highly variable in tree species composition and structural characteristics due to the influence of fire, climate, and soils. In general, stands will be >150 years of age, with 10 trees/ac (25 trees/ha) that are > 21 in (53 cm) dbh, and 1-3 snags/ac (2.5-7.5 snags/ha) that are > 12-14 in (30-35 cm) diameter. Downed logs may vary from abundant to absent. Canopies may be single or multi-layered. Evidence of human-caused alterations to the stand will be absent or so slight as to not affect the ecosystem's essential structures and functions. 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 and 80-160 years old east 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.
- ☐ **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.
- ☒ **Shrub-steppe:** A nonforested vegetation type consisting of one or more layers of perennial bunchgrasses and a conspicuous but discontinuous layer of shrubs (see Eastside Steppe for sites with little or no shrub cover).
- ☐ **Eastside Steppe:** Nonforested vegetation type dominated by broadleaf herbaceous flora (i.e., forbs), perennial bunchgrasses, or a combination of both. Bluebunch wheatgrass (*Pseudoroegneria spicata*) is often the prevailing cover component along with Idaho fescue (*Festuca idahoensis*), Sandberg bluegrass (*Poa secunda*), rough fescue (*F. campestris*), or needlegrasses (*Achnatherum* spp.).
- ☐ **Juniper Savannah:** All juniper woodlands.

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

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Detail Map – Wetland C

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: Port of Moses Lake - Segment 1 City/County: Moses Lake/Grant Sampling Date: 5/17/2017
 Applicant/Owner: _____ State: WA Sampling Point: DP -C1
 Investigator(s): SEP/ IDC Section, Township, Range: S11, T19N, R28E
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): concave Slope (%): 0
 Subregion (LRR): Arid West Lat: 47° 8'45.75"N Long: 119°15'49.89"W Datum: _____
 Soil Map Unit Name: 141 - Starbuck very fine sandy loam. 0-15% slopes NWI classification: PEM1C
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ☒ No ☐	Is the Sampled Area within a Wetland? Yes ☒ No ☐
Hydric Soil Present?	Yes ☒ No ☐	
Wetland Hydrology Present?	Yes ☒ No ☐	
Remarks:		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. <u>Elaeagnus angustifolia - Russian-olive</u>	<u>20</u>	<u>yes</u>	<u>FAC</u>	
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>2</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
4. _____	_____	_____	_____	
50% = _____, 20% = _____	_____	= Total Cover		
Sapling/Shrub Stratum (Plot size: _____)				Prevalence Index worksheet:
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	OBL species _____ x1 = _____
3. _____	_____	_____	_____	FACW species _____ x2 = _____
4. _____	_____	_____	_____	FAC species _____ x3 = _____
5. _____	_____	_____	_____	FACU species _____ x4 = _____
50% = _____, 20% = _____	_____	= Total Cover		UPL species _____ x5 = _____
Herb Stratum (Plot size: _____)				Column Totals: _____ (A) _____ (B)
1. <u>Rumex crispus - Curly dock</u>	<u>80</u>	<u>yes</u>	<u>FAC</u>	Prevalence Index = B/A = _____
2. _____	_____	_____	_____	Hydrophytic Vegetation Indicators: ☒ Dominance Test is >50% ☐ Prevalence Index is ≤3.0 ¹ ☐ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ☐ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
50% = _____, 20% = _____	_____	= Total Cover		
Woody Vine Stratum (Plot size: _____)				Hydrophytic Vegetation Present? Yes ☒ No ☐
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
50% = _____, 20% = _____	_____	= Total Cover		
% Bare Ground in Herb Stratum _____	% Cover of Biotic Crust _____			
Remarks:				

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type ¹	Loc ²		
0-4	10YR 4/4	100	_____	_____	_____	_____	Silt loam	_____
4-8	10YR 5/1	90	10YR 4/6	10	C	M	Silt loam	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____

¹Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- | | |
|--|--|
| ☐ Histosol (A1) | ☐ Sandy Redox (S5) |
| ☐ Histic Epipedon (A2) | ☐ Stripped Matrix (S6) |
| ☐ Black Histic (A3) | ☐ Loamy Mucky Mineral (F1) |
| ☐ Hydrogen Sulfide (A4) | ☐ Loamy Gleyed Matrix (F2) |
| ☐ Stratified Layers (A5) (LRR C) | ☒ Depleted Matrix (F3) |
| ☐ 1 cm Muck (A9) (LRR D) | ☐ Redox Dark Surface (F6) |
| ☐ Depleted Below Dark Surface (A11) | ☐ Depleted Dark Surface (F7) |
| ☐ Thick Dark Surface (A12) | ☐ Redox Depressions (F8) |
| ☐ Sandy Mucky Mineral (S1) | ☐ Vernal Pools (F9) |
| ☐ Sandy Gleyed Matrix (S4) | |

Indicators for Problematic Hydric Soils³:

- | |
|---|
| ☐ 1 cm Muck (A9) (LRR C) |
| ☐ 2 cm Muck (A10) (LRR B) |
| ☐ Reduced Vertic (F18) |
| ☐ Red Parent Material (TF2) |
| ☐ Other (Explain in Remarks) |

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if present):**

Type: _____

Depth (Inches): _____

Hydric Soils Present?Yes ☒ No ☐

Remarks: _____

HYDROLOGY**Wetland Hydrology Indicators:**

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

Secondary Indicators (2 or more required)

- | | | |
|--|--|--|
| ☐ Surface Water (A1) | ☐ Salt Crust (B11) | ☐ Water Marks (B1) (Riverine) |
| ☒ High Water Table (A2) | ☐ Biotic Crust (B12) | ☐ Sediment Deposits (B2) (Riverine) |
| ☒ Saturation (A3) | ☐ Aquatic Invertebrates (B13) | ☐ Drift Deposits (B3) (Riverine) |
| ☐ Water Marks (B1) (Nonriverine) | ☐ Hydrogen Sulfide Odor (C1) | ☐ Drainage Patterns (B10) |
| ☐ Sediment Deposits (B2) (Nonriverine) | ☐ Oxidized Rhizospheres along Living Roots (C3) | ☐ Dry-Season Water Table (C2) |
| ☐ Drift Deposits (B3) (Nonriverine) | ☐ Presence of Reduced Iron (C4) | ☐ Crayfish Burrows (C8) |
| ☐ Surface Soil Cracks (B6) | ☐ Recent Iron Reduction in Tilled Soils (C6) | ☐ Saturation Visible on Aerial Imagery (C9) |
| ☐ Inundation Visible on Aerial Imagery (B7) | ☐ Thin Muck Surface (C7) | ☐ Shallow Aquitard (D3) |
| ☐ Water-Stained Leaves (B9) | ☐ Other (Explain in Remarks) | ☐ FAC-Neutral Test (D5) |

Field Observations:Surface Water Present? Yes ☐ No ☒ Depth (inches): _____Water Table Present? Yes ☒ No ☐ Depth (inches): 9Saturation Present? (includes capillary fringe) Yes ☒ No ☐ Depth (inches): 8**Wetland Hydrology Present?** Yes ☒ No ☐

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

Remarks: _____

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: Port of Moses Lake - Segment 1 City/County: Moses Lake/Grant Sampling Date: 5/17/2017
 Applicant/Owner: _____ State: WA Sampling Point: DP -C2
 Investigator(s): SEP/ IDC Section, Township, Range: S14, T19N, R28E
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): concave Slope (%): 0
 Subregion (LRR): Arid West Lat: 47° 8'46.08"N Long: 119°15'48.08"W Datum: _____
 Soil Map Unit Name: 141 - Starbuck very fine sandy loam. 0-15% slopes NWI classification: n/a
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☐ No ☒
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ☒ No ☐	Is the Sampled Area within a Wetland? Yes ☐ No ☒
Hydric Soil Present?	Yes ☐ No ☒	
Wetland Hydrology Present?	Yes ☐ No ☒	
Remarks:		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:																								
1. _____	_____	_____	_____		Number of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A)																							
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: _____ (B)																								
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)																								
4. _____	_____	_____	_____	Prevalence Index worksheet: <table border="0"> <tr> <td colspan="2"><u>Total % Cover of :</u></td> <td><u>Multiply by:</u></td> </tr> <tr> <td>OBL species</td> <td>_____</td> <td>x1 = _____</td> </tr> <tr> <td>FACW species</td> <td>_____</td> <td>x2 = _____</td> </tr> <tr> <td>FAC species</td> <td>_____</td> <td>x3 = _____</td> </tr> <tr> <td>FACU species</td> <td>_____</td> <td>x4 = _____</td> </tr> <tr> <td>UPL species</td> <td>_____</td> <td>x5 = _____</td> </tr> <tr> <td>Column Totals:</td> <td>_____ (A)</td> <td>_____ (B)</td> </tr> <tr> <td colspan="3">Prevalence Index = B/A = _____</td> </tr> </table>	<u>Total % Cover of :</u>		<u>Multiply by:</u>	OBL species	_____	x1 = _____	FACW species	_____	x2 = _____	FAC species	_____	x3 = _____	FACU species	_____	x4 = _____	UPL species	_____	x5 = _____	Column Totals:	_____ (A)	_____ (B)	Prevalence Index = B/A = _____		
<u>Total % Cover of :</u>		<u>Multiply by:</u>																										
OBL species	_____	x1 = _____																										
FACW species	_____	x2 = _____																										
FAC species	_____	x3 = _____																										
FACU species	_____	x4 = _____																										
UPL species	_____	x5 = _____																										
Column Totals:	_____ (A)	_____ (B)																										
Prevalence Index = B/A = _____																												
50% = _____, 20% = _____	_____	= Total Cover																										
<u>Sapling/Shrub Stratum (Plot size: _____)</u>																												
1. _____	_____	_____	_____																									
2. _____	_____	_____	_____																									
3. _____	_____	_____	_____																									
4. _____	_____	_____	_____																									
5. _____	_____	_____	_____																									
50% = _____, 20% = _____	_____	= Total Cover																										
<u>Herb Stratum (Plot size: _____)</u>																												
1. <u>Rumex crispus Curly dock</u>	<u>100</u>	<u>yes</u>	<u>FAC</u>																									
2. _____	_____	_____	_____																									
3. _____	_____	_____	_____																									
4. _____	_____	_____	_____																									
5. _____	_____	_____	_____																									
6. _____	_____	_____	_____																									
7. _____	_____	_____	_____																									
8. _____	_____	_____	_____																									
50% = _____, 20% = _____	_____	= Total Cover																										
<u>Woody Vine Stratum (Plot size: _____)</u>																												
1. _____	_____	_____	_____																									
2. _____	_____	_____	_____																									
50% = _____, 20% = _____	_____	= Total Cover																										
% Bare Ground in Herb Stratum _____	% Cover of Biotic Crust _____																											
Hydrophytic Vegetation Indicators: ☒ Dominance Test is >50% ☐ Prevalence Index is ≤3.0 ¹ ☐ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ☐ 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 ☐																												
Remarks:																												

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type ¹	Loc ²		
0-3	10YR 3/2	100	_____	_____	_____	_____	silt loam	_____
3-12	10 YR 4/2	100	_____	_____	_____	_____	silt loam	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____

¹Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- | | |
|--|---|
| ☐ Histosol (A1) | ☐ Sandy Redox (S5) |
| ☐ Histic Epipedon (A2) | ☐ Stripped Matrix (S6) |
| ☐ Black Histic (A3) | ☐ Loamy Mucky Mineral (F1) |
| ☐ Hydrogen Sulfide (A4) | ☐ Loamy Gleyed Matrix (F2) |
| ☐ Stratified Layers (A5) (LRR C) | ☐ Depleted Matrix (F3) |
| ☐ 1 cm Muck (A9) (LRR D) | ☐ Redox Dark Surface (F6) |
| ☐ Depleted Below Dark Surface (A11) | ☐ Depleted Dark Surface (F7) |
| ☐ Thick Dark Surface (A12) | ☐ Redox Depressions (F8) |
| ☐ Sandy Mucky Mineral (S1) | ☐ Vernal Pools (F9) |
| ☐ Sandy Gleyed Matrix (S4) | |

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR C)**
- ☐ 2 cm Muck (A10) **(LRR B)**
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if present):**

Type: _____

Depth (Inches): _____

Hydric Soils Present?Yes ☐ No ☒

Remarks:

HYDROLOGY**Wetland Hydrology Indicators:**

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

- | | |
|--|--|
| ☐ Surface Water (A1) | ☐ Salt Crust (B11) |
| ☐ High Water Table (A2) | ☐ Biotic Crust (B12) |
| ☐ Saturation (A3) | ☐ Aquatic Invertebrates (B13) |
| ☐ Water Marks (B1) (Nonriverine) | ☐ Hydrogen Sulfide Odor (C1) |
| ☐ Sediment Deposits (B2) (Nonriverine) | ☐ Oxidized Rhizospheres along Living Roots (C3) |
| ☐ Drift Deposits (B3) (Nonriverine) | ☐ Presence of Reduced Iron (C4) |
| ☐ Surface Soil Cracks (B6) | ☐ Recent Iron Reduction in Tilled Soils (C6) |
| ☐ Inundation Visible on Aerial Imagery (B7) | ☐ Thin Muck Surface (C7) |
| ☐ Water-Stained Leaves (B9) | ☐ Other (Explain in Remarks) |

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) **(Riverine)**
- ☐ Sediment Deposits (B2) **(Riverine)**
- ☐ Drift Deposits (B3) **(Riverine)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:Surface Water Present? Yes ☐ No ☒ Depth (inches): _____Water Table Present? Yes ☐ No ☒ Depth (inches): _____Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): _____**Wetland Hydrology Present?** Yes ☐ No ☒

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: Port of Moses Lake - Segment 1 City/County: Moses Lake/Grant Sampling Date: 5/17/2017
 Applicant/Owner: _____ State: WA Sampling Point: DP -C3
 Investigator(s): SEP/ IDC Section, Township, Range: S14, T19N, R28E
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): concave Slope (%): 0
 Subregion (LRR): Arid West Lat: 47° 8'43.49"N Long: 119°15'51.35"W Datum: _____
 Soil Map Unit Name: 68- Kittitas silt loam NWI classification: PEM1C
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ☒ No ☐	Is the Sampled Area within a Wetland? Yes ☒ No ☐
Hydric Soil Present?	Yes ☒ No ☐	
Wetland Hydrology Present?	Yes ☒ No ☐	
Remarks:		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>5</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
4. _____	_____	_____	_____	
50% = _____, 20% = _____	_____	= Total Cover		
Sapling/Shrub Stratum (Plot size: _____)				
1. <u>Salix exiqua</u> <u>Narrow-leaf willow</u>	<u>20</u>	<u>yes</u>	<u>FACW</u>	Prevalence Index worksheet:
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	<u>Total % Cover of :</u>
4. _____	_____	_____	_____	<u>Multiply by:</u>
5. _____	_____	_____	_____	OBL species _____ x1 = _____
50% = _____, 20% = _____	_____	= Total Cover		FACW species _____ x2 = _____
Herb Stratum (Plot size: _____)				FAC species _____ x3 = _____
1. <u>Typha latifolia</u> <u>Common cattail</u>	<u>20</u>	<u>yes</u>	<u>OBL</u>	FACU species _____ x4 = _____
2. <u>Eleocharis palustris</u> <u>- Common spikerush</u>	<u>20</u>	<u>yes</u>	<u>OBL</u>	UPL species _____ x5 = _____
3. <u>Phalaris arundinacea</u> <u>- Reed canarygrass</u>	<u>20</u>	<u>yes</u>	<u>FACW</u>	Column Totals: _____ (A) _____ (B)
4. <u>Equisetum arvense</u> <u>- Field horsetail</u>	<u>30</u>	<u>yes</u>	<u>FAC</u>	Prevalence Index = B/A = _____
5. _____	_____	_____	_____	Hydrophytic Vegetation Indicators:
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	☒ Dominance Test is >50%
8. _____	_____	_____	_____	☐ Prevalence Index is ≤3.0 ¹
50% = _____, 20% = _____	<u>90</u>	= Total Cover		☐ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
Woody Vine Stratum (Plot size: _____)				☐ Problematic Hydrophytic Vegetation ¹ (Explain)
1. _____	_____	_____	_____	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. _____	_____	_____	_____	
50% = _____, 20% = _____	_____	= Total Cover		Hydrophytic Vegetation Present? Yes ☒ No ☐
% Bare Ground in Herb Stratum _____	% Cover of Biotic Crust _____			
Remarks:				

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type ¹	Loc ²		
0-16	10YR 4/2	95	10YR 5/6	5	_____	_____	Silt loam	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____

¹Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- | | |
|--|--|
| ☐ Histosol (A1) | ☐ Sandy Redox (S5) |
| ☐ Histic Epipedon (A2) | ☐ Stripped Matrix (S6) |
| ☐ Black Histic (A3) | ☐ Loamy Mucky Mineral (F1) |
| ☐ Hydrogen Sulfide (A4) | ☐ Loamy Gleyed Matrix (F2) |
| ☐ Stratified Layers (A5) (LRR C) | ☒ Depleted Matrix (F3) |
| ☐ 1 cm Muck (A9) (LRR D) | ☐ Redox Dark Surface (F6) |
| ☐ Depleted Below Dark Surface (A11) | ☐ Depleted Dark Surface (F7) |
| ☐ Thick Dark Surface (A12) | ☐ Redox Depressions (F8) |
| ☐ Sandy Mucky Mineral (S1) | ☐ Vernal Pools (F9) |
| ☐ Sandy Gleyed Matrix (S4) | |

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR C)**
- ☐ 2 cm Muck (A10) **(LRR B)**
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if present):**

Type: _____

Depth (Inches): _____

Hydric Soils Present?Yes ☒ No ☐

Remarks:

HYDROLOGY**Wetland Hydrology Indicators:**

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

Secondary Indicators (2 or more required)

- | | | |
|--|--|--|
| ☐ Surface Water (A1) | ☐ Salt Crust (B11) | ☐ Water Marks (B1) (Riverine) |
| ☒ High Water Table (A2) | ☐ Biotic Crust (B12) | ☐ Sediment Deposits (B2) (Riverine) |
| ☒ Saturation (A3) | ☐ Aquatic Invertebrates (B13) | ☐ Drift Deposits (B3) (Riverine) |
| ☐ Water Marks (B1) (Nonriverine) | ☐ Hydrogen Sulfide Odor (C1) | ☐ Drainage Patterns (B10) |
| ☐ Sediment Deposits (B2) (Nonriverine) | ☐ Oxidized Rhizospheres along Living Roots (C3) | ☐ Dry-Season Water Table (C2) |
| ☐ Drift Deposits (B3) (Nonriverine) | ☐ Presence of Reduced Iron (C4) | ☐ Crayfish Burrows (C8) |
| ☐ Surface Soil Cracks (B6) | ☐ Recent Iron Reduction in Tilled Soils (C6) | ☐ Saturation Visible on Aerial Imagery (C9) |
| ☐ Inundation Visible on Aerial Imagery (B7) | ☐ Thin Muck Surface (C7) | ☐ Shallow Aquitard (D3) |
| ☐ Water-Stained Leaves (B9) | ☐ Other (Explain in Remarks) | ☐ FAC-Neutral Test (D5) |

Field Observations:Surface Water Present? Yes ☐ No ☒ Depth (inches): _____Water Table Present? Yes ☒ No ☐ Depth (inches): 2Saturation Present? (includes capillary fringe) Yes ☒ No ☐ Depth (inches): 0**Wetland Hydrology Present?** Yes ☒ No ☐

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: Port of Moses Lake - Segment 1 City/County: Moses Lake/Grant Sampling Date: 5/17/2017
 Applicant/Owner: _____ State: WA Sampling Point: DP -C4
 Investigator(s): SEP/ IDC Section, Township, Range: S14, T19N, R28E
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): concave Slope (%): 0
 Subregion (LRR): Arid West Lat: 47° 8'43.14"N Long: 119°15'50.81"W Datum: _____
 Soil Map Unit Name: 91- Prosser very fine sandy loam . 5-10% slopes NWI classification: n/a
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☐ No ☒
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ☐ No ☒	Is the Sampled Area within a Wetland? Yes ☐ No ☒
Hydric Soil Present?	Yes ☐ No ☒	
Wetland Hydrology Present?	Yes ☐ No ☒	
Remarks:		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)																
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
50% = _____, 20% = _____	_____	= Total Cover																		
Sapling/Shrub Stratum (Plot size: _____)																				
1. <u>Artemisia rigida Scabland sagebrush</u>	<u>30</u>	_____	<u>UPL</u>	Prevalence Index worksheet: <table border="0"> <tr> <td><u>Total % Cover of :</u></td> <td><u>Multiply by:</u></td> </tr> <tr> <td>OBL species _____</td> <td>x1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x2 = _____</td> </tr> <tr> <td>FAC species _____</td> <td>x3 = _____</td> </tr> <tr> <td>FACU species _____</td> <td>x4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x5 = _____</td> </tr> <tr> <td>Column Totals: _____ (A)</td> <td>_____ (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = _____</td> </tr> </table>	<u>Total % Cover of :</u>	<u>Multiply by:</u>	OBL species _____	x1 = _____	FACW species _____	x2 = _____	FAC species _____	x3 = _____	FACU species _____	x4 = _____	UPL species _____	x5 = _____	Column Totals: _____ (A)	_____ (B)	Prevalence Index = B/A = _____	
<u>Total % Cover of :</u>	<u>Multiply by:</u>																			
OBL species _____	x1 = _____																			
FACW species _____	x2 = _____																			
FAC species _____	x3 = _____																			
FACU species _____	x4 = _____																			
UPL species _____	x5 = _____																			
Column Totals: _____ (A)	_____ (B)																			
Prevalence Index = B/A = _____																				
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
50% = _____, 20% = _____	_____	= Total Cover																		
Herb Stratum (Plot size: _____)																				
1. <u>Bromus tectorum - Cheat grass</u>	<u>50</u>	_____	<u>UPL</u>	Hydrophytic Vegetation Indicators: ☒ Dominance Test is >50% ☐ Prevalence Index is ≤3.0 ¹ ☐ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ☐ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
2. <u>Poa secunda - Curly bluegrass</u>	<u>20</u>	_____	<u>FACU</u>																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
50% = _____, 20% = _____	_____	= Total Cover																		
Woody Vine Stratum (Plot size: _____)																				
1. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes ☐ No ☒																
2. _____	_____	_____	_____																	
50% = _____, 20% = _____	_____	= Total Cover																		
% Bare Ground in Herb Stratum _____	% Cover of Biotic Crust _____																			
Remarks:																				

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type ¹	Loc ²		
0-12	2.5Y 7/1	100	_____	_____	_____	_____	_____	ashy sandy silt loam
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____

¹Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- | | |
|--|---|
| ☐ Histosol (A1) | ☐ Sandy Redox (S5) |
| ☐ Histic Epipedon (A2) | ☐ Stripped Matrix (S6) |
| ☐ Black Histic (A3) | ☐ Loamy Mucky Mineral (F1) |
| ☐ Hydrogen Sulfide (A4) | ☐ Loamy Gleyed Matrix (F2) |
| ☐ Stratified Layers (A5) (LRR C) | ☐ Depleted Matrix (F3) |
| ☐ 1 cm Muck (A9) (LRR D) | ☐ Redox Dark Surface (F6) |
| ☐ Depleted Below Dark Surface (A11) | ☐ Depleted Dark Surface (F7) |
| ☐ Thick Dark Surface (A12) | ☐ Redox Depressions (F8) |
| ☐ Sandy Mucky Mineral (S1) | ☐ Vernal Pools (F9) |
| ☐ Sandy Gleyed Matrix (S4) | |

Indicators for Problematic Hydric Soils³:

- | |
|---|
| ☐ 1 cm Muck (A9) (LRR C) |
| ☐ 2 cm Muck (A10) (LRR B) |
| ☐ Reduced Vertic (F18) |
| ☐ Red Parent Material (TF2) |
| ☐ Other (Explain in Remarks) |

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if present):**

Type: _____

Depth (Inches): _____

Hydric Soils Present?Yes ☐ No ☒

Remarks:

HYDROLOGY**Wetland Hydrology Indicators:**

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

- | | |
|--|--|
| ☐ Surface Water (A1) | ☐ Salt Crust (B11) |
| ☐ High Water Table (A2) | ☐ Biotic Crust (B12) |
| ☐ Saturation (A3) | ☐ Aquatic Invertebrates (B13) |
| ☐ Water Marks (B1) (Nonriverine) | ☐ Hydrogen Sulfide Odor (C1) |
| ☐ Sediment Deposits (B2) (Nonriverine) | ☐ Oxidized Rhizospheres along Living Roots (C3) |
| ☐ Drift Deposits (B3) (Nonriverine) | ☐ Presence of Reduced Iron (C4) |
| ☐ Surface Soil Cracks (B6) | ☐ Recent Iron Reduction in Tilled Soils (C6) |
| ☐ Inundation Visible on Aerial Imagery (B7) | ☐ Thin Muck Surface (C7) |
| ☐ Water-Stained Leaves (B9) | ☐ Other (Explain in Remarks) |

Secondary Indicators (2 or more required)

- | |
|--|
| ☐ Water Marks (B1) (Riverine) |
| ☐ Sediment Deposits (B2) (Riverine) |
| ☐ Drift Deposits (B3) (Riverine) |
| ☐ Drainage Patterns (B10) |
| ☐ Dry-Season Water Table (C2) |
| ☐ Crayfish Burrows (C8) |
| ☐ Saturation Visible on Aerial Imagery (C9) |
| ☐ Shallow Aquitard (D3) |
| ☐ FAC-Neutral Test (D5) |

Field Observations:Surface Water Present? Yes ☐ No ☒ Depth (inches): _____Water Table Present? Yes ☐ No ☒ Depth (inches): _____Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): _____**Wetland Hydrology Present?**Yes ☐ No ☒

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

Remarks:

RATING SUMMARY – Eastern Washington

Name of wetland (or ID #): Wetland E - Port of Moses Lake Date of site visit: 5/17/2017

Rated by Sue Platte Trained by Ecology? ☒ Yes ☐ No Date of training 9-May-14

HGM Class used for rating Riverine 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 Pro

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

1. Category of wetland based on FUNCTIONS

 Category I - Total score = 22 - 27
 X Category II - Total score = 19 - 21
 Category III - Total score = 16 - 18
 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	H	M	M	
Landscape Potential	H	L	M	
Value	M	M	H	Total
Score Based on Ratings	8	5	7	20

2. Category based on SPECIAL CHARACTERISTICS of wetland

CHARACTERISTIC	Category
Vernal Pools	
Alkali	
Wetland of High Conservation Value	
Bog and Calcareous Fens	
Old Growth or Mature Forest - slow growing	
Aspen Forest	
Old Growth or Mature Forest - fast growing	
Floodplain forest	II
None of the above	

Maps and Figures required to answer questions correctly for Eastern Washington

Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes and classes of emergents	D 1.3, H 1.1, H 1.5	
Hydroperiods (including area of open water for H 1.3)	D 1.4, H 1.2, H 1.3	
Location of outlet (<i>can be added to map of hydroperiods</i>)	D 1.1, D 4.1	
Boundary of area within 150 ft of the wetland (<i>can be added to another figure</i>)	D 2.2, D 5.2	
Map of the contributing basin	D 5.3	
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)	D 3.1, D 3.2	
Screen capture of list of TMDLs for WRIA in which wetland is found (website)	D 3.3	

Riverine Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes and classes of emergents	H 1.1, H 1.5	
Hydroperiods	H 1.2, H 1.3	
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	
Map of the contributing basin	R 2.2, R 2.3, R 5.2	
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	
Width of wetland vs. width of stream (<i>can be added to another figure</i>)	R 4.1	
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)	R 3.1	
Screen capture of list of TMDLs for WRIA in which wetland is found (website)	R 3.2, R 3.3	

Lake Fringe Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes and classes of emergents	L 1.1, L 4.1, H 1.1, H 1.5	
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 wetland is found (website)	L 3.3	

Slope Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes and classes of emergents	H 1.1, H 1.5	
Hydroperiods	H 1.2, H 1.3	
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 figure above</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 wetland is found (website)	S 3.3	

HGM Classification of Wetland in Eastern Washington

For questions 1 - 4, the criteria described must apply to the entire unit being rated.

If the 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 - 4 apply, and go to Question 5.

1. Does the entire unit **meet both** of the following criteria?

- ☐ The vegetated part of the wetland is on the water side of the Ordinary High Water Mark of a body of permanent open water (without any plants on the surface) that is at least 20 ac (8 ha) in size
- ☐ At least 30% of the open water area is deeper than 10 ft (3 m)

☒ NO - go to 2

☐ YES - The wetland class is **Lake Fringe** (Lacustrine Fringe)

2. 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 3

☐ 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 foot deep).

3. 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 10 years.

☐ NO - go to 4

☒ YES - The wetland class is **Riverine**

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

4. 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 5

☐ YES - The wetland class is **Depressional**

5. 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 - 4 APPLY TO DIFFERENT AREAS IN THE WETLAND 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 (the riverine portion is within the boundary of depression)	Depressional
Depressional + Lake Fringe	Depressional
Riverine + Lake Fringe	Riverine

*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:

RIVERINE WETLANDS		Points (only 1 score per box)
Water Quality Functions - Indicators that the site functions to improve water quality		
R 1.0. Does the site have the potential to improve water quality?		
R 1.1. Area of surface depressions within the Riverine wetland that can trap sediments during a flooding event:		
Depressions cover $> \frac{1}{3}$ area of wetland	points = 6	3
Depressions cover $> \frac{1}{10}$ area of wetland	points = 3	
Depressions present but cover $< \frac{1}{10}$ area of wetland	points = 1	
No depressions present	points = 0	
R 1.2. Structure of plants in the wetland (areas with $> 90\%$ cover at person height; not Cowardin classes):		
Forest or shrub $> \frac{2}{3}$ the area of the wetland	points = 10	10
☐ Forest or shrub $\frac{1}{3} - \frac{2}{3}$ area of the wetland	points = 5	
☐ Ungrazed, herbaceous plants $> \frac{2}{3}$ area of wetland	points = 5	
Ungrazed herbaceous plants $\frac{1}{3} - \frac{2}{3}$ area of wetland	points = 2	
Forest, shrub, and ungrazed herbaceous $< \frac{1}{3}$ area of wetland	points = 0	
Total for R 1	Add the points in the boxes above	13

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

R 2.0. Does the landscape have the potential to support the water quality function of the site?		
R 2.1. Is the wetland within an incorporated city or within its UGA?	Yes = 2 No = 0	2
R 2.2. Does the contributing basin to the wetland include a UGA or incorporated area?	Yes = 1 No = 0	1
R 2.3. Does at least 10% of the contributing basin contain tilled fields, pastures, or forests that have been clearcut within the last 5 years?	Yes = 1 No = 0	1
R 2.4. Is $> 10\%$ of the area within 150 ft of the wetland in land uses that generate pollutants?	Yes = 1 No = 0	1
R 2.5. Are there other sources of pollutants coming into the wetland that are not listed in questions R 2.1 - R 2.4?		1
Sources	Yes = 1 No = 0	
Total for R 2	Add the points in the boxes above	6

Rating of Landscape Potential If score is: ☒ 3 - 6 = H ☐ 1 or 2 = M ☐ 0 = L Record the rating on the first page

R 3.0. Is the water quality improvement provided by the site valuable to society?		
R 3.1. Is the wetland along a stream or river that is on the 303(d) list or on a tributary that drains to one within 1 mi?	Yes = 1 No = 0	1
R 3.2. Does the river or stream have TMDL limits for nutrients, toxics, or pathogens?	Yes = 1 No = 0	0
R 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 drainage in which the unit is found).	Yes = 2 No = 0	0
Total for R 3	Add the points in the boxes above	1

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

RIVERINE WETLANDS		Points (only 1 score per box)	
Hydrologic Functions - Indicators that site functions to reduce flooding and stream erosion			
R 4.0. Does the site have the potential to reduce flooding and erosion?			
R 4.1. Characteristics of the overbank storage the wetland provides: <i>Estimate the average width of the wetland perpendicular to the direction of the flow and the width of the stream or river channel (distance between banks). Calculate the ratio: (average width of wetland)/(average width of stream between banks).</i>			
If the ratio is more than 2	points = 10	2	
If the ratio is 1 - 2	points = 8		
If the ratio is $\frac{1}{2}$ - < 1	points = 4		
If the ratio is $\frac{1}{4}$ - < $\frac{1}{2}$	points = 2		
If the ratio is < $\frac{1}{4}$	points = 1		
R 4.2. Characteristics of plants that slow down water velocities during floods: <i>Treat large woody debris as forest or shrub. Choose the points appropriate for the best description (polygons need to have > 90% cover at person height. These are NOT Cowardin classes).</i>			
Forest or shrub for more than $\frac{2}{3}$ the area of the wetland	points = 6	6	
Forest or shrub for > $\frac{1}{3}$ area OR emergent plants > $\frac{2}{3}$ area	points = 4		
Forest or shrub for > $\frac{1}{10}$ area OR emergent plants > $\frac{1}{3}$ area	points = 2		
Plants do not meet above criteria	points = 0		
Total for R 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

R 5.0. Does the landscape have the potential to support the hydrologic functions of the site?			
R 5.1. Is the stream or river adjacent to the wetland downcut?	Yes = 0 No = 1	0	
R 5.2. Does the up-gradient watershed include a UGA or incorporated area?	Yes = 1 No = 0	0	
R 5.3. Is the up-gradient stream or river controlled by dams?	Yes = 0 No = 1	0	
Total for R 5		Add the points in the boxes above	0

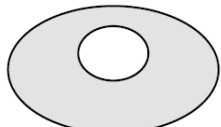
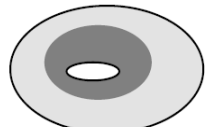
Rating of Landscape Potential If score is: ☐ 3 = H ☐ 1 or 2 = M ☒ 0 = L

Record the rating on the first page

R 6.0. Are the hydrologic functions provided by the site valuable to society?			
R 6.1. Distance to the nearest areas downstream that have flooding problems? <i>Choose the description that best fits the site.</i>			
The sub-basin immediately down-gradient of the site has flooding problems that result in damage to human or natural resources	points = 2	1	
Surface flooding problems are in a sub-basin farther down-gradient	points = 1		
No flooding problems anywhere downstream	points = 0		
R 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 R 6		Add the points in the boxes above	1

Rating of Value If score is: ☐ 2 - 4 = H ☒ 1 = M ☐ 0 = L

Record the rating on the first page

These questions apply to wetlands of all HGM classes.		(only 1 score per box)
HABITAT FUNCTIONS - Indicators that site functions to provide important habitat		
H 1.0. Does the wetland have the potential to provide habitat for many species?		
H 1.1. Structure of plant community: <i>Check the Cowardin vegetation classes present and categories of emergent plants. Size threshold for each category is $\geq \frac{1}{4}$ ac or $\geq 10\%$ of the wetland if wetland is < 2.5 ac.</i>		2
☐ Aquatic bed ☐ Emergent plants 0 - 12 in (0-30 cm) high are the highest layer and have $> 30\%$ cover ☒ Emergent plants $> 12 - 40$ in ($> 30-100$ cm) high are the highest layer with $> 30\%$ cover ☐ Emergent plants > 40 in (> 100 cm) high are the highest layer with $> 30\%$ cover ☒ Scrub-shrub (areas where shrubs have $> 30\%$ cover) ☒ Forested (areas where trees have $> 30\%$ cover)		
4 or more checks: points = 3 3 checks: points = 2 2 checks: points = 1 1 check: points = 0		
H 1.2. Is one of the vegetation types Aquatic Bed? Yes = 1 No = 0		
H 1.3. <u>Surface water</u>		
H 1.3.1. Does the wetland have areas of open water (without emergent or shrub plants) over at least $\frac{1}{4}$ ac OR 10% of its area during the March to early June OR in August to the end of September? Answer YES for Lake Fringe wetlands. ☐ Yes = 3 points & go to H 1.4 No = go to H 1.3.2		0
H 1.3.2. Does the wetland have an intermittent or permanent, and unvegetated stream within its boundaries, or along one side, over at least $\frac{1}{4}$ ac or 10% of its area? Answer yes only if H 1.3.1 is No. ☐ Yes = 3 No = 0		
H 1.4. <u>Richness of plant species</u> Count the number of plant species in the wetland that cover at least 10 ft^2 . <i>Different patches of the same species can be combined to meet the size threshold. You do not have to name the species. Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Russian olive, Phragmites, Canadian thistle, yellow-flag iris, and saltcedar (Tamarisk)</i> # of species <u>6</u>		1
Scoring: > 9 species: points = 2 4 - 9 species: points = 1 < 4 species: points = 0		
H 1.4. <u>Interspersion of habitats</u> Decide from the diagrams below whether interspersion among types of plant structures (described in H 1.1), and unvegetated areas (open water or mudflats) is high, moderate, low, or none. Use map of Cowardin and emergent plant classes prepared for questions H 1.1 and map of open water from H 1.3. If you have four or more plant classes or three classes and open water, the rating is always high.		2
   		
None = 0 points Low = 1 point Moderate = 2 points		
All three diagrams in this row are HIGH = 3 points		
  		
Riparian braided channels with 2 classes		

H 1.6. Special habitat features: <i>Check the habitat features that are present in the wetland. The number of checks is the number of points.</i>			
☐ Loose rocks larger than 4 in OR large, downed, woody debris (> 4 in diameter) within the area of surface ponding or in stream. ☒ Cattails or bulrushes are present within the wetland. ☐ Standing snags (diameter at the bottom > 4 in) in the wetland or within 30 m (100 ft) of the edge ☒ Emergent or shrub vegetation in areas that are permanently inundated/ponded. ☒ Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 45 degree slope) OR signs of recent beaver activity ☐ Invasive species cover less than 20% in each stratum of vegetation (<i>canopy, sub-canopy, shrubs, herbaceous, moss/ground cover</i>)	3		
Total for H 1		Add the points in the boxes above	8

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 habitat functions of the site?		
H 2.1 Accessible habitat (only area of habitat abutting wetland). If total accessible habitat is: <i>Calculate:</i> 70 % undisturbed habitat + (30 % moderate & low intensity land uses / 2) = 85% > 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		
H 2.2. Undisturbed habitat in 1 km Polygon around wetland. <i>Calculate:</i> 20 % undisturbed habitat + (20 % moderate & low intensity land uses / 2) = 30% 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		
H 2.3 Land use intensity in 1 km Polygon: > 50% of 1 km Polygon is high intensity land use points = (-2) Does not meet criterion above points = 0		
H 2.4. The wetland is in an area where annual rainfall is less than 12 in, and its water regime is not influenced by irrigation practices, dams, or water control structures. Generally, this means outside boundaries of reclamation areas, irrigation districts, or reservoirs Yes = 3 No = 0		
Total for H 2		Add the points in the boxes above

Rating of Landscape Potential If Score is: ☐ 4 - 9 = 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 ☐ It has 3 or more priority habitats within 100 m (see Appendix B) ☐ It provides habitat for Threatened or Endangered species (any plant or animal on state or federal lists) ☐ It is mapped as a location for an individual WDFW species ☐ It is a Wetland of High Conservation Value as determined by the Department of Natural Resources ☒ 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 Site has 1 or 2 priority habitats within 100 m (see Appendix B) 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

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate category.

NOTE: A wetland may meet the criteria for more than one set of special characteristics. Record all those that apply. NOTE: All wetlands should also be characterized based on their functions.

Wetland Type	Category
<i>Check off any criteria that apply to the wetland. List the category when the appropriate criteria are met.</i>	
SC 1.0. Vernal Pools Is the wetland less than 4000 ft² , and does it meet at least two of the following criteria? ☐ Its only source of water is rainfall or snowmelt from a small contributing basin and has no groundwater input. ☐ Wetland plants are typically present only in the spring; the summer vegetation is typically upland annuals. <i>If you find perennial, obligate, wetland plants, the wetland is probably NOT a vernal pool.</i> ☐ The soil in the wetland is shallow [< 1 ft (30 cm) deep] and is underlain by an impermeable layer such as basalt or clay. ☐ Surface water is present for less than 120 days during the wet season. ☐ Yes - Go to SC 1.1 ☒ No = Not vernal pool	
SC 1.1. Is the vernal pool relatively undisturbed in February and March? ☐ Yes – Go to SC 1.2 ☐ No = Not a vernal pool with special characteristics	
SC 1.2. Is the vernal pool in an area where there are at least 3 separate aquatic resources within 0.5 mi (other wetlands, rivers, lakes etc.)? ☐ Yes = Category II ☐ No = Category III	
SC 2.0. Alkali wetlands Does the wetland meet one of the following criteria? ☐ The wetland has a conductivity > 3.0 mS/cm. ☐ The wetland has a conductivity between 2.0 and 3.0 mS, and more than 50% of the plant cover in the wetland can be classified as “alkali” species (see Table 4 for list of plants found in alkali systems). ☐ If the wetland is dry at the time of your field visit, the central part of the area is covered with a layer of salt. OR does the wetland unit meet two of the following three sub-criteria? ☐ Salt encrustations around more than 75% of the edge of the wetland ☐ More than $\frac{3}{4}$ of the plant cover consists of species listed on Table 4 ☐ A pH above 9.0. All alkali wetlands have a high pH, but please note that some freshwater wetlands may also have a high pH. Thus, pH alone is not a good indicator of alkali wetlands. ☐ Yes = Category I ☒ No = Not an alkali wetland	
SC 3.0. Wetlands of High Conservation Value (WHCV) SC 3.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? ☒ Yes - Go to SC 3.2 ☐ No - Go to SC 3.3 SC 3.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? ☐ Yes = Category I ☒ No = Not WHCV SC 3.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf ☐ Yes - Contact WNHP/WDNR and to SC 3.4 ☒ No = Not WHCV SC 3.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website? ☐ Yes = Category I ☒ No = Not WHCV	

SC 4.0. Bogs and Calcareous Fens <i>Does the wetland (or any part of the wetland unit) meet both the criteria for soils and vegetation in bogs or calcareous fens? Use the key below to identify if the wetland is a bog or calcareous fen. If you answer yes you will still need to rate the wetland based on its functions.</i> SC 4.1. Does an area within the wetland have organic soil horizons (i.e., layers of organic soil), either peats or mucks, that compose 16 in or more of the first 32 in of the soil profile? <i>See Appendix C for a field key to identify organic soils.</i> ☐ Yes - Go to SC 4.3 ☒ No - Go to SC 4.2 SC 4.2. Does an area within the wetland 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? ☐ Yes - Go to SC 4.3 ☒ No = Is not a bog for rating SC 4.3. Does an area within the wetland have more than 70% cover of mosses at ground level AND at least 30% of the total plant cover consists of species in Table 5? ☐ Yes = Category I bog ☐ No - Go to SC 4.4 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 5 are present, the wetland is a bog. SC 4.4. Is an area with peats or mucks forested (> 30% cover) with 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 5 provide more than 30% of the cover under the canopy? ☐ Yes = Category I bog ☐ No - Go to SC 4.5 SC 4.5. Do the species listed in Table 6 comprise at least 20% of the total plant cover within an area of peats and mucks? ☐ Yes = Is a Calcareous Fen for purpose of rating ☐ No - Go to SC 4.6 SC 4.6. Do the species listed in Table 6 comprise at least 10% of the total plant cover in an area of peats and mucks, AND one of the two following conditions is met: ☐ Marl deposits [calcium carbonate (CaCO₃) precipitate] occur on the soil surface or plant stems ☐ The pH of free water is ≥ 6.8 AND electrical conductivity is ≥ 200 uS/cm at multiple locations within the wetland ☐ Yes = Is a Category I calcareous fen ☒ No = Is not a calcareous fen	
SC 5.0. Forested Wetlands <i>Does the wetland have an area of forest rooted within its boundary that meets at least one of the following three criteria? (Continue only if you have identified that a forested class is present in question H)</i> ☒ The wetland is within the 100 year floodplain of a river or stream ☐ Aspen (<i>Populus tremuloides</i>) represents at least 20% of the total cover of woody species ☐ There is at least ¼ ac of trees (even in wetlands smaller than 2.5 ac) that are “mature” or “old-growth” according to the definitions for these priority habitats developed by WDFW (see definitions in question H3.1) ☒ Yes - Go to SC 5.1 ☐ No = Not a forested wetland with special characteristics SC 5.1. Does the wetland have a forest canopy where more than 50% of the tree species (by cover) are slow growing native trees (see Table 7)? ☐ Yes = Category I ☒ No - Go to SC 5.2 SC 5.2. Does the wetland have areas where aspen (<i>Populus tremuloides</i>) represents at least 20% of the total cover of woody species? ☐ Yes = Category I ☒ No - Go to SC 5.3 SC 5.3. Does the wetland have at least ¼ acre with a forest canopy where more than 50% of the tree species (by cover) are fast growing species (see Table 7)? ☐ Yes = Category II ☒ No - Go to SC 5.4 SC 5.4. Is the forested component of the wetland within the 100 year floodplain of a river or stream? ☒ Yes = Category II ☐ No = Not a forested wetland with special characteristics	
Category of wetland based on Special Characteristics <i>Choose the highest rating if wetland falls into several categories</i> If you answered No for all types, enter “Not Applicable” on Summary Form	Cat. II

Appendix B: WDFW Priority Habitats in Eastern Washington

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.

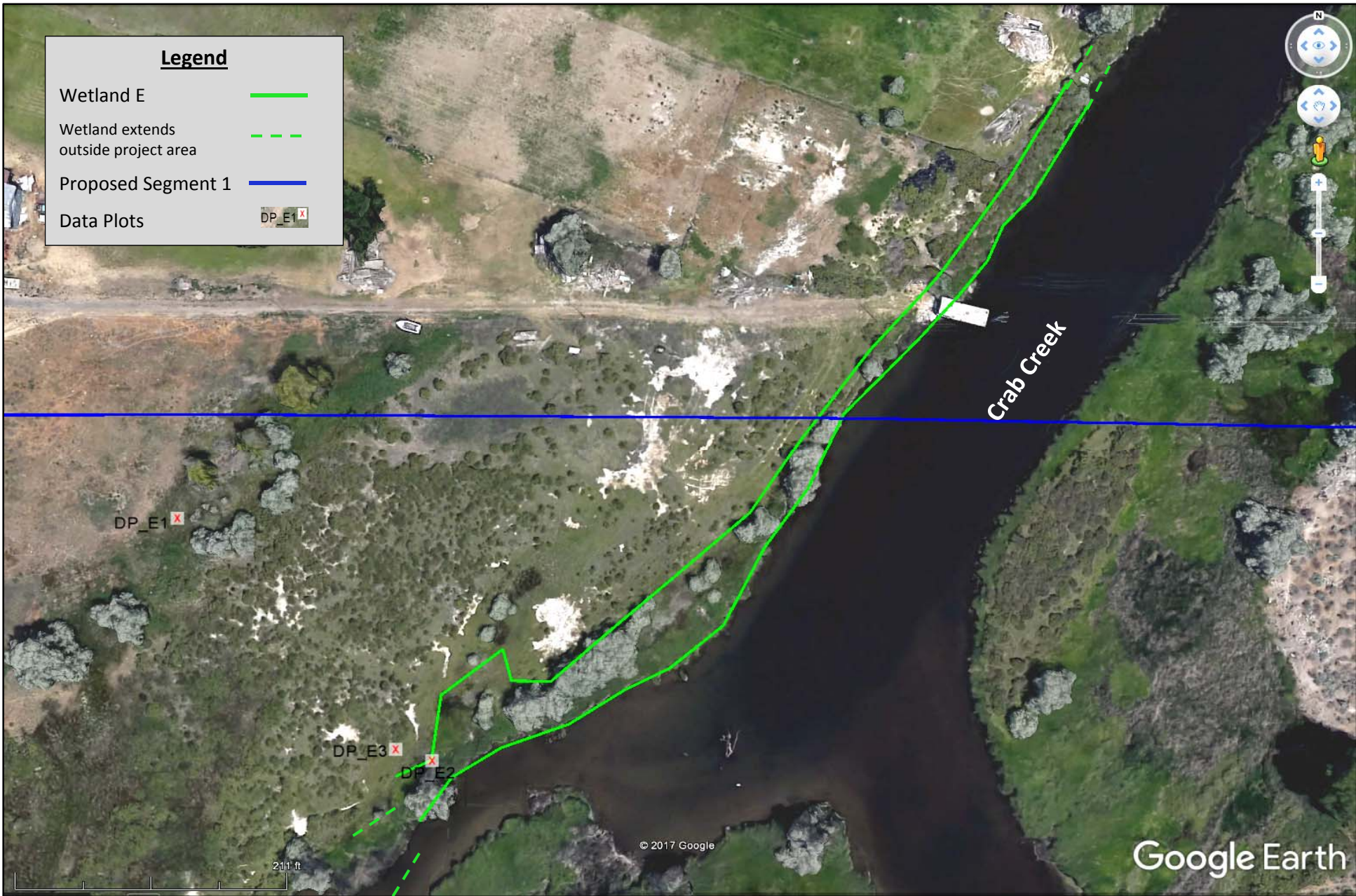
<http://wdfw.wa.gov/publications/00165/wdfw00165.pdf> or access the list from here:

<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*).
- ☐ **Old-growth/Mature forests:** Old-growth east of Cascade crest – Stands are highly variable in tree species composition and structural characteristics due to the influence of fire, climate, and soils. In general, stands will be >150 years of age, with 10 trees/ac (25 trees/ha) that are > 21 in (53 cm) dbh, and 1-3 snags/ac (2.5-7.5 snags/ha) that are > 12-14 in (30-35 cm) diameter. Downed logs may vary from abundant to absent. Canopies may be single or multi-layered. Evidence of human-caused alterations to the stand will be absent or so slight as to not affect the ecosystem's essential structures and functions. 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 and 80-160 years old east 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.
- ☐ **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.
- ☒ **Shrub-steppe:** A nonforested vegetation type consisting of one or more layers of perennial bunchgrasses and a conspicuous but discontinuous layer of shrubs (see Eastside Steppe for sites with little or no shrub cover).
- ☐ **Eastside Steppe:** Nonforested vegetation type dominated by broadleaf herbaceous flora (i.e., forbs), perennial bunchgrasses, or a combination of both. Bluebunch wheatgrass (*Pseudoroegneria spicata*) is often the prevailing cover component along with Idaho fescue (*Festuca idahoensis*), Sandberg bluegrass (*Poa secunda*), rough fescue (*F. campestris*), or needlegrasses (*Achnatherum* spp.).
- ☐ **Juniper Savannah:** All juniper woodlands.

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



Detail Map – Wetland E

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