



## CLARK COUNTY

### RFP #872

### PRPJ0000287/CRP391112 MASON CREEK BARRIER IMPROVEMENTS

### QUESTIONS and ANSWERS

UPDATED: OCTOBER 13, 2023

	QUESTION	ANSWER
1.	Why is the County resoliciting for this work?	County performed a constructability review on planning grant plans and documents and identified design conflicts that needed to be resolved prior to moving forward with permitting and construction. County intends to utilize the products of the planning grant to create a bid-ready PS&E package for construction of this project.
2.	What is Average Daily Traffic (ADT) on NE 102 <sup>nd</sup> Ave?	1394 vehicles per year 2017 sample
3.	Where can I find the planning grant, project plans and documents?	Please see 'project attachments' on Washington State Recreation and Conservation Office webpage link- <a href="#">PRISM Project Snapshot - Washington State Recreation and Conservation Office</a>
4.	The Grant/PRISM website includes 100% Plans that are signed and dated December 2020. It appears that the final design is complete, what changed and what is expected of the selected design team?	County performed a constructability review on planning grant plans and documents and identified design conflicts that needed to be resolved prior to moving forward with permitting and construction. County intends for consultant to evaluate feasibility of the products of the planning grant and utilize them to create a bid-ready PS&E package for construction of this project.
5.	What is the County's estimated budget for this final design?	County estimated total cost for this project currently is \$2,560,000; however cost is not a consideration in selection of a consultant.
6.	Is the proposed stream alignment and crossing structure set, or does the County anticipate design changes to the AECOM final Plans?	The proposed stream alignment and crossing structure is not set. County does not anticipate design changes, consultant to evaluate feasibility of the products of the planning grant and utilize them to create a bid-ready PS&E package for construction of this project.

7.	<b>The project background describes that a JARPA has been prepared for the project. Did the County submit Nationwide Permit documents already?</b>	County has not submitted for Nationwide Permit.
8.	<b>Does the County have permit agency or resource co-manager (tribal) comments from the previous design development?</b>	County has not submitted for permits, no agency comments are available to share from the previous design development.
9.	<b>Is it possible to get a copy of the Critical Area Report for the project?</b>	Please find attached previous design Wetland Report.



Submitted to:  
**Clark County**  
P.O. Box 9810  
Vancouver, WA 98666  
(360) 397-2121 x4258

Submitted by:  
**AECOM**  
111 SW Columbia  
Suite 1500  
Portland, OR 97201  
(971) 323-6262

# Mason Creek Fish Passage Barrier Removal Project

## Wetland Delineation Report



December 2020

Job# 60615503

# Executive Summary

On behalf of Clark County Public Works (County), AECOM Technical Services (AECOM) conducted a field study to delineate and assess wetlands and waterways within the vicinity of the proposed Mason Creek Fish Passage Barrier Removal project in rural Clark County, Washington. The project, which received a grant from the Washington Department of Fish and Wildlife, proposes to remove two barriers to anadromous fish passage: one barrier is a small-sized culvert on Mason Creek at NE 102nd Avenue that will be replaced with a large box culvert; the other barrier is a large instream log (approximately 750 feet upstream of the culvert) that will have a fish-passable notch cut into it. Because of the creek and associated riparian wetlands, this study was necessary to determine the stream and wetland extents to minimize impacts from proposed work.

AECOM visited the Mason Creek fish passage project areas on October 10, 2019, to delineate stream and wetland boundaries and to rate the wetland to determine wetland categories. One wetland totaling 0.017 acre (741 square feet) and one waterway (Mason Creek) totaling 0.174 acre (approximately 334 linear feet) were identified within the study areas. This report describes site conditions, assessment methods, and results of the field study. This report also provides photographs and maps of Mason Creek, the wetland, and associated buffer areas that are regulated under Clark County's Critical Areas Ordinances for habitat conservation (Clark County Code [CCC] Chapter 40.440) and wetland protection (CCC Chapter 40.450).

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# Site Data Summary

<b>Project Name</b>	Mason Creek Fish Passage Project	
<b>Client Contact</b>	Jennifer Taylor, Clark County Public Works Jennifer.Taylor@clark.wa.gov (360) 397-2121 x4227	
<b>AECOM Wetland Delineators</b>	Noah Herlocker, PWS Wetland Ecologist Noah.Herlocker@aecom.com (971) 323-6299	Michelle Brownell, WPIT Ecologist Michelle.Brownell@aecom.com (206) 438-2424
<b>Report Preparer</b>	Michelle Brownell and Brian Fletcher	
<b>Quality Control</b>	Danni Kline and Noah Herlocker	
<b>Site Visit Dates</b>	October 10, 2019	
<b>Site Location</b>	The Mason Creek Fish Passage project is located at NE 102nd Road, approximately 0.25 mile north of NE 314th Street and 400 feet south of NE 322nd Street.	
<b>Legal Description</b>	SW ¼ of Section 04 Township 4N, Range 2E	
<b>Latitude/Longitude</b>	45.851887°, -122.568688°	
<b>USGS Topo Map</b>	Battle Ground 7.5-minute quadrangle	
<b>Zoning</b>	Forest-80 (FR-80), Rural-20 (R-20)	
<b>Elevation</b>	418–442 feet	
<b>Drainage Path</b>	Mason Creek → East Fork Lewis River → Lewis River → Columbia River	
<b>WRIA</b>	27 – Lewis	
<b>Mapped NRCS Soil Series</b>	HcB–Hesson clay loam, 0-8% slopes; HcF–Hesson clay loam, 30-55% slopes; OhF–Olequa silty clay loam, heavy variant, 20-45% slopes; WgB – Washougal gravelly loam, 0-8% slopes	
<b>Cowardin Classes</b>	PFO, Riverine	
<b>HGM Classes</b>	Riverine	
<b>Study Area Size</b>	3.00 acres	
<b>Total On-Site Wetland Area</b>	0.017 acre (741 square feet)	
<b>Total On-Site Waters Length</b>	334 feet (0.174 acre)	

# Section A. Introduction

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## A.1 Project Location

The Mason Creek Fish Passage Barrier Removal project site is in northern Clark County, Washington, just south of the intersection at NE 322nd Street and NE 102nd Avenue. The study area comprises the existing Mason Creek culvert at NE 102nd Avenue and an area extending 50 feet perpendicular to the creek for 100 feet upstream and downstream of the culvert. Also included is a small area on Mason Creek approximately 750 feet upstream (northeast) of the culvert. The project location is shown on Figure 1 in Appendix A.

## A.2 Project Background

In 2018, AECOM prepared an application on behalf of Clark County Public Works to remove two barriers to anadromous fish passage on Mason Creek. The application was approved by the Washington Department of Fish and Wildlife (WDFW) Fish Barrier Removal Board (FBRB). Clark County is proposing to remove the existing 50-year-old culvert and replace it with a fish-friendly box culvert to allow passage of all life stages of salmonids. The project must also be evaluated for compliance with the National Historic Preservation Act (NHPA).

Wetland and stream boundaries and associated buffers will be used to inform design concepts to minimize aquatic impacts, if possible. The buffer boundaries will also be used for critical areas permitting, which may be necessary for the culvert replacement.

## A.3 Site Description

Mason Creek flows southwest through the 102nd Avenue culvert and converges with East Fork Lewis River. The project area is within a relatively natural, gently sloping forested valley, except for the roadway and some residences just off-site to the west.

Dominant overstory vegetation within the study area includes red alder (*Alnus rubra*), Oregon ash (*Fraxinus latifolia*), western red cedar (*Thuja plicata*), Douglas-fir (*Pseudotsuga menziesii*), and big-leaf maple (*Acer macrophyllum*) trees, which form the riparian habitat along Mason Creek and surrounding slopes. Dominant shrub species include salmonberry (*Rubus spectabilis*), red elderberry (*Sambucus racemosa*), Nootka rose (*Rosa nutkana*), beaked hazelnut (*Corylus cornuta*), Pacific ninebark (*Physocarpus capitatus*), trailing blackberry (*Rubus ursinus*), and the ubiquitous Himalayan blackberry (*Rubus armeniacus/bifrons*). Dominant understory herbaceous vegetation includes sword fern (*Polystichum munitum*), lady fern (*Athyrium felix-femina/cyclosorum*), reed canarygrass (*Phalaris arundinacea*), piggy-back plant (*Tolmiea menziesii*), and field bindweed (*Convolvulus arvensis*).



## *A.4 Land Uses and Site Alterations*

The study area to the west and east of NE 102nd Avenue is zoned Rural (R-20) and Forest-80 (FR-80), respectively, and contains undeveloped natural riparian areas adjacent to Mason Creek. Adjacent lots to the west and north are rural residential, single-family homes. Other parcels beyond the study area have been logged within the past 3 to 6 years. The general hydrologic condition of Mason Creek has been altered by NE 102nd Avenue, where the small culvert partially impounds the flows.

# Section B. Methods

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## *B.1 Existing Data Review*

Prior to conducting the wetland site assessment, AECOM reviewed data from the following sources:

- National Wetland Inventory (NWI) mapping (USFWS 2019)
- Natural Resources Conservation Service (NRCS) Soil Survey of Clark County (NRCS 2019a)
- NRCS National Water and Climate Center (NRCS 2019b)
- Aerial photography (Google Earth; ArcGIS online)
- National Weather Service (NWS 2019)
- Washington Department of Natural Resources Natural Heritage program (WNHP 2019)

## *B.2 Precipitation Data and Analysis*

Precipitation information was reviewed so that observed hydrology indicators could be assessed relative to the normal range of precipitation for the dates of fieldwork. Precipitation data were gathered from the National Weather Service data center in Vancouver, Washington, to characterize climatic conditions prior to and during the wetland delineation field work on October 10, 2019. Normal precipitation amounts are based on NRCS WETS data for station Vancouver 4 NNE (FIPS 53011) collected between 1981 and 2010 (NRCS 2019b).

## *B.3 Site-Specific Field Methodology*

A site visit was conducted on October 1, 2019. Wetland presence was determined by a certified Professional Wetland Scientist (PWS) per the methods outlined in the 1987 U.S. Army Corps of Engineers (USACE) *Wetlands Delineation Manual* (Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (Regional Supplement) (USACE 2010). The delineated wetlands are described below, and representative photographs are provided in Appendix B.

## Wetland Delineation

Wetland boundaries were determined by examining the vegetation, soils, and hydrology indicators at two formal sample plot locations in the study area. At each sample plot, dominant vegetation, soil profiles, and wetland hydrology indicators were recorded on standard Wetland Determination Data Forms sourced from the Regional Supplement (USACE 2010). These forms characterize the wetland or upland conditions and are provided in Appendix C. Numerous undocumented test pits were also examined throughout the study area to observe hydric soil and hydrology indicators, which helped refine the wetland boundary.

The wetland boundary was marked in the field using pink ribbon flagging tied to woody vegetation. Sample plot locations were marked using pink and blue ribbon flagging labeled with the sample plot number, the date, and “AECOM.”

Determining wetland presence requires evaluation of three metrics: hydrophytic vegetation, hydric soil, and wetland hydrology. Methods for assessing each metric are described below.

### *Vegetation*

AECOM assessed the dominant plant species present within circular plots centered on each sample plot location. Unless recorded as otherwise, herbaceous, shrub, and vine species were assessed within a 5-foot radius; tree species were assessed within a 30-foot radius. Dominant plant species were determined using the 50/20 rule (Environmental Laboratory 1987). The wetland indicator status for each dominant species was assigned using the Washington subset of the National Wetland Plant List (Lichvar et al. 2016).<sup>1</sup> The Dominance Test was used to determine hydrophytic vegetation.

### *Soils*

At each sample plot location, AECOM dug a soil pit to a depth of 16–20 inches below ground surface. Soil profile characteristics were examined to see if they met the definition of a hydric soil indicator per the 2010 Regional Supplement (USACE 2010). Soil characteristics were described using standards established by the National Technical Committee on Hydric Soils (NRCS 2006). Soil colors were determined using a Munsell Soil Color Chart (X-Rite 2009). Soils were also investigated for oxidized rhizospheres along living roots as an indicator of wetland hydrology.

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#### <sup>1</sup>Indicator Status Ratings

Indicator Status	Abrv.	Definitions - Short Version ( ERDC/CRREL TN-12-1 )
Obligate	OBL	Almost always occur in wetlands.
Facultative Wetland	FACW	Usually occur in wetlands, but may occur in non-wetlands.
Facultative	FAC	Occur equally in wetlands and non-wetlands.
Facultative Upland	FACU	Usually occur in non-wetlands, but may occur in wetlands.
Upland	UPL	Almost never occur in wetlands.

### *Hydrology*

Common indicators of wetland hydrology (e.g., surface water, water table, or saturation within 12 inches of the ground surface) were investigated at each sample plot and test pit location. Wetland hydrology was also satisfied by observing at least two secondary indicators, including geomorphic condition and a positive result of the FAC-neutral test.

### **Waterways Delineation**

Non-wetland waterways were delineated using field indicators of Ordinary High Water (OHW), which include a clear, natural scour line impressed on the bank, a break in the slope angle of the bank, the lower elevation of woody vegetation, and/or a textural change of depositional sediment. GPS points were collected along the left and right banks at OHW marks.

### **Wetland Classification and Rating**

#### *Wetland Classification*

Wetlands were classified per the *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al. 1979). Under the Cowardin classification system, palustrine wetlands include all non-tidal wetlands dominated by vegetation, including forested (PFO), scrub-shrub (PSS), and emergent (PEM) based on the percent cover of woody vegetation. PFO wetlands have at least 30 percent canopy cover of trees over 20 feet tall; PSS wetlands have at least 30 percent cover of woody vegetation less than 20 feet tall; PEM wetlands are dominated by herbaceous species with less than 30 percent cover of woody vegetation. Modifiers are often included in the Cowardin classification to indicate water regime and other pertinent information.

Wetlands were also classified using the Hydrogeomorphic (HGM) method. The HGM method classifies wetlands based on the hydrologic and geomorphic characteristics that control many wetland functions. The HGM classification of each wetland was determined using the hydrologic criteria questions in the *Washington State Wetland Rating System for Western Washington—2014 Update* (Hruby 2014).

#### *Wetland Rating and Categorization, and Buffer Determination*

Wetlands were rated using the Wetland Rating System for Western Washington 2014 Update, published by Washington's Department of Ecology (Ecology) (Hruby 2014). Clark County uses Ecology's system for rating and categorizing wetlands to determine buffer sizes. Both Ecology and the county recognize four categories of wetlands: I, II, III, and IV. Categories are typically determined by an overall rating score that considers the functional capacity of the wetland to improve water quality, reduce flooding and stream erosion, and provide habitat; and the opportunity for each wetland to provide those general functions.

Wetland categories can also be assigned if they exhibit certain special characteristics, such as if the wetland is associated with a known Wetland of High Conservation Value. Category I wetlands are rare and of the highest value, while Category IV wetlands are typically very degraded and provide low wetland ecological functions and values. For rating purposes, the entire wetland is assessed, including

the estimated areas that extend beyond the delineation study area. Based on wetland rating scores and categories, wetland buffers were determined and mapped following the procedures outlined in Clark County Code (CCC) Chapters 40.440 and 40.450.

Clark County assigns waterways a Riparian Priority Habitat buffer based on the Washington Department of Natural Resources (DNR) water types. Mason Creek is listed as a Type F (fish-bearing, perennial) stream by the DNR. Riparian habitat buffers for DNR Type F waters are 200 feet.

### *B.4 Mapping Methods*

A Geo7x GPS unit with sub-meter positional accuracy was used to survey wetland boundary flags, sample plot locations, and photo point locations. Raw GPS point data were collected in the field. At each point, 30 GPS positions were collected and averaged. The data were post-processed in Trimble's GPS Pathfinder Office resulting in an estimated average positional accuracy of 1–3 feet. GPS survey data were exported to ArcMap 10.5.1 for figure production. Near the culvert, GPS positions were not always accurate, so Clark County surveyors returned to the site and collected several of the wetland and OHW flag points, which were used to improve delineation accuracy.

## Section C. Results of Information Review

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This section describes the existing wetland and soil inventories and precipitation data.

### *C.1 Wetland Inventories*

Within the study area, the NWI classifies the area surrounding Mason Creek as a freshwater forested, temporarily flooded wetland (PFOA). East and west of the study area, it maps Mason Creek as riverine, unknown perennial, unconsolidated bottom, permanently flooded (R5UBH). Tributaries flowing into Mason Creek from the north and south are mapped as riverine, intermittent, streambed, seasonally flooded (R4SBC). Wetland inventories are shown on Figure 2.

### *C.2 Soil Survey*

Table 1 lists the NRCS-mapped soil series along with their map unit symbol, acreage, and relative size within the study area. None of the mapped soils within the study area contain hydric components (hydric rating = 0). Mapped soils are shown on Figure 2.

**Table 1: Soil Types within the Study Area**

Map Unit Symbol	Map Unit Name	Acreage within Study Area	Percent of Study Area
HcB	Hesson clay loam, 0 to 8 percent slopes	0.6	21%
HcF	Hesson clay loam, 30 to 55 percent slopes	0.3	9%
OhF	Olequa silty clay loam, heavy variant, 20 to 45 percent slopes	0.9	31%
WgB	Washougal gravelly loam, 0 to 8 percent slopes	1.2	39%
<b>Total</b>		<b>3.0</b>	<b>100%</b>

Source: NRCS 2019

Hesson clay loam is a well-drained soil formed from alluvium that occurs on terraces and escarpments. Olequa silty clay loam is a somewhat poorly drained soil formed from alluvium and found on terraces. Washougal gravelly loam is a somewhat excessively drained soil that also occurs on terraces but is formed from gravelly alluvium.

### C.3 Precipitation Data

Climatic conditions for the study area are characterized by 41.63 inches of average annual rainfall, 40°F average winter air temperature, 64°F average summer air temperature, and typically about 234 frost-free days per year (NRCS 2019). As with most of western Washington, the highest monthly precipitation occurs between October 1 and March 31.

Table 2 and 3 provide antecedent rainfall recorded near the study area for the month-to-date, the 3 months preceding the site visit, and monthly averages and normal rainfall (30 and 70 percentiles).

**Table 2: Recent Local Precipitation Summary**

Site Visit Date	Total	Month-To-Date	Normal	Percent of
	Precipitation (inches)	Month-to-Date (inches)	Month-to-Date (inches)	Normal Month-to-Date
October 10	0.00	0.32	0.85	38%

Source: NWS 2019

**Table 3: Summary of Monthly Recorded and Normal Precipitation**

Category	July 2019 (inches)	August 2019 (inches)	September 2019 (inches)
Recorded Precipitation	0.43	1.49	5.20
Normal Precipitation <sup>1</sup>	0.69	0.74	1.61
Normal Range (30% – 70%) <sup>1</sup>	0.28 – 0.77	0.28 – 0.83	0.76 – 1.90
Condition <sup>2</sup>	Normal	Wet	Wet

<sup>1</sup> Data are for Vancouver 4 NNE, approximately 9 miles west of the study area.<sup>2</sup> NRCS 1997

Data in Table 2 indicate dry conditions for the week prior to the October 10 site visit, while Table 3 indicates that precipitation in the 3 months prior to the site visit ranged from normal to wet.

## Section D. Results of Field Investigation

Within the study area, one wetland (Wetland A) and one waterway (Mason Creek) were identified. Wetland A and Mason Creek are shown on Figure 3, and photographs of each feature are included in Appendix B. The wetland–upland boundary conditions are documented on two wetland determination data forms in Appendix C. The wetland is expected to fall under local (Clark County), state (Ecology), and federal (USACE) jurisdiction. A summary of the two features is provided in Table 4.

**Table 4: Summary of Wetlands and Waters within the Mason Creek Fish Passage Study Area**

Name	Acreage Within Study Area	Cowardin Classification <sup>1</sup>	HGM Classification <sup>2</sup>	Notes
Wetland A	0.017	PFOC	Riverine	SP-1 and 2; Photos 1 and 2
Mason Creek	0.174	R3UB1	Riverine	Photos 3, 4, and 6
<b>TOTAL</b>	<b>0.191</b>			

<sup>1</sup> Cowardin Classifications: PFOC – Palustrine Forested, Seasonally flooded; R3UB1 – Riverine, Unconsolidated bottom, Cobble-Gravel

<sup>2</sup> HGM Classifications were determined by the Wetland Rating System’s hydrologic criteria questions

### Wetland A

Wetland A occupies 0.017 acre (741 square feet) and is entirely contained within the study area. The Cowardin classification is PFOC, and the HGM classification is Riverine. It is south-sloping and connects to the northern (right) bank of Mason Creek just before the culvert inlet at NE 102nd Avenue. The wetland occurs within a topographic swale/valley that fans out slightly where it connects to Mason Creek—the creek regularly floods this southern portion of the wetland. The steep road embankment of NE 102nd Avenue defines the western edge of the wetland (see Photo 2).

Dominant trees in Wetland A include Oregon ash and western red cedar, which provide an overstory with approximately 30 percent cover. The shrub stratum provides 15 to 50 percent cover that is dominated by salmonberry, red elderberry, Nootka rose, Pacific ninebark, and some Himalayan blackberry. Dominant understory herbaceous vegetation includes sword fern, lady fern, reed canarygrass, piggy-back plant, and field bindweed.

Wetland A soils have a silt loam texture and consist of a very dark grayish-brown (10YR 3/2) topsoil over a depleted matrix subsoil layer (10YR 4/2) with distinct dark yellowish-brown (10YR 4/6) redoximorphic concentrations.

Wetland hydrology is primarily met by shallow groundwater and saturation. In addition, the wetland’s geomorphic position adjacent to Mason Creek and its prevalence of FACW vegetation also satisfy the hydrology criterion. Roadside runoff and seeps in the northern portion of the wetland join the overbank flooding and shallow groundwater associated with Mason Creek in the southern portion.

The boundary conditions of Wetland A are documented on SP-1 and SP-2 in Appendix C and can be seen in Photos 1 and 2 in Appendix B.

### Mason Creek

Mason Creek is a perennial waterway that runs approximately 334 feet (0.174 acre) through the study areas—this acreage includes the separate small study area approximately 750 feet northeast of the 102nd Avenue culvert, where a natural log barrier is proposed to be notched (see Photo 6). The creek is classified under Cowardin and HGM as R3UB1 and Riverine, respectively. It averages approximately 15 to 20 feet wide at OHW and contains a cobble/gravel substrate and relatively stable banks. It is mostly shaded by trees and shrubs and flows west through the existing culvert at NE 102nd Avenue. Bank conditions include overhanging native ferns, shrubs, trees, as well as invasive Himalayan blackberry, reed canarygrass, and field bindweed.

Mason Creek flows into East Bank Lewis River, mainstem Lewis River, and ultimately the Columbia River. It is classified as a F-type stream (fish-bearing, perennial) under CCC Chapter 40.440.010(C)(1)(a). According to WDFW’s Priority Habitat and Species database, this section of Mason Creek is a breeding area for coho (*Oncorhynchus kisutch*) and occurrence/migration area for steelhead (*Oncorhynchus mykiss*)—both listed as federally threatened species.

Mason Creek is shown on Photos 3, 4, and 6 in Appendix B.

## Section E. Functions, Ratings, and Buffers

Based on rating scores for water quality, hydrologic, and habitat functions, Wetland A received a rating of Category II. The wetland rating maps can be seen on Figures 5a–5e, and the forms are provided in Appendix D. Scores for each function and final rating category are shown in Table 5 and discussed briefly below.

**Table 5: Wetland Rating Scores**

Wetland Name	Functions			Total Score	Ecology Rating
	Water Quality	Hydrologic	Habitat		
A	6	6	8	20	II

The scores shown in Table 5 indicate that Wetland A functions at a moderate level for its abilities to improve water quality and reduce flooding, and a high level to provide wildlife habitat. Because Mason Creek contains occurrences of federally listed fish species, and there is a Total Maximum Daily Load in progress in the area (Figure 5e), the wetland is valuable to society for the functions it provides. The rating score is based on functions and not special characteristics.

The high percentages of dense, uncut vegetation trap pollutants, and the overbank connection to Mason Creek helps improve water quality and alleviate flooding. The tree and shrub canopies help shade the wetland and Mason Creek and provide habitat niches. Runoff from NE 102nd Avenue generates some pollution, giving the wetland an opportunity to provide water quality functions. The habitat potential of the surrounding landscape (within 1 kilometer) scored high, as there is a large percentage of accessible, relatively undisturbed habitat, and moderate and low-intensity land uses.

Clark County uses the scores from the wetland rating system and the estimated land use intensity to determine buffer widths. These buffer widths are intended to protect water quality and/or habitat around the wetland (Table 6). Per CCC Table 40.450.030-2, a 100-foot buffer is required to protect water quality functions in Category II wetlands undergoing a high-intensity use; however, per CCC Table 40.450.030-3, a 300-foot buffer is required to protect Category I, II, or III wetlands with a habitat rating score of 8 or 9 points and the proposed activity is a high-intensity land use.

Per Table 40.450.030-4, public road projects are called out as a high-intensity land use (road work on NE 102nd Avenue as needed for the culvert replacement). Clark County protection buffers are summarized in Table 6 and depicted on Figure 4.

**Table 6: Clark County Buffers Required to Protect Water Quality and Habitat Functions**

<b>Feature</b>	<b>Wetland Rating Category</b>	<b>Estimated Land Use Intensity</b>	<b>Water Quality Protection Buffer (feet)</b>	<b>Habitat Protection Buffer (feet)</b>
Wetland A	II	High	100	300
Mason Creek	N/A	---	---	200 <sup>1</sup>

Source: Clark County Code (2019), Tables 40.450.030-2 through 40.450.030-4 and CCC 40.440.010.C

<http://www.codepublishing.com/wa/clarkcounty.html>

<sup>1</sup> Riparian Priority Habitat Buffer for a Type F stream per the Shoreline Master Program; CCC 40.440.010.C and 40.460.530

## Section F. Conclusions

One wetland (A) and one waterway (Mason Creek) were documented within the Mason Creek Fish Passage Barrier Removal study area. Wetland A totals 0.017 acre (741 square feet) and Mason Creek totals 334 linear feet (0.174 acre, summed over two separate study area locations).



Figures are provided in Appendix A, Appendix B shows photographs of each feature, Appendix C contains the wetland determination forms completed during the field visits, and Appendix D contains the wetland rating forms. The wetland is expected to fall under Washington's state Water Pollution Control Act jurisdiction, as well as federal Clean Water Act jurisdiction, based on the role it plays in providing water storage, base flow support, and chemical/nutrient uptake for Mason Creek (a Water of the U.S.).

## Section G. Disclaimer

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This report documents the investigation, best professional judgment, and conclusions of the investigators. It is correct and complete to the best of our knowledge. It should be considered a Preliminary Jurisdictional Determination of wetlands and waterways, and should only be used at one's own risk until it has been reviewed and approved in writing by the U.S. Army Corps of Engineers.

## Section H. Literature Citations

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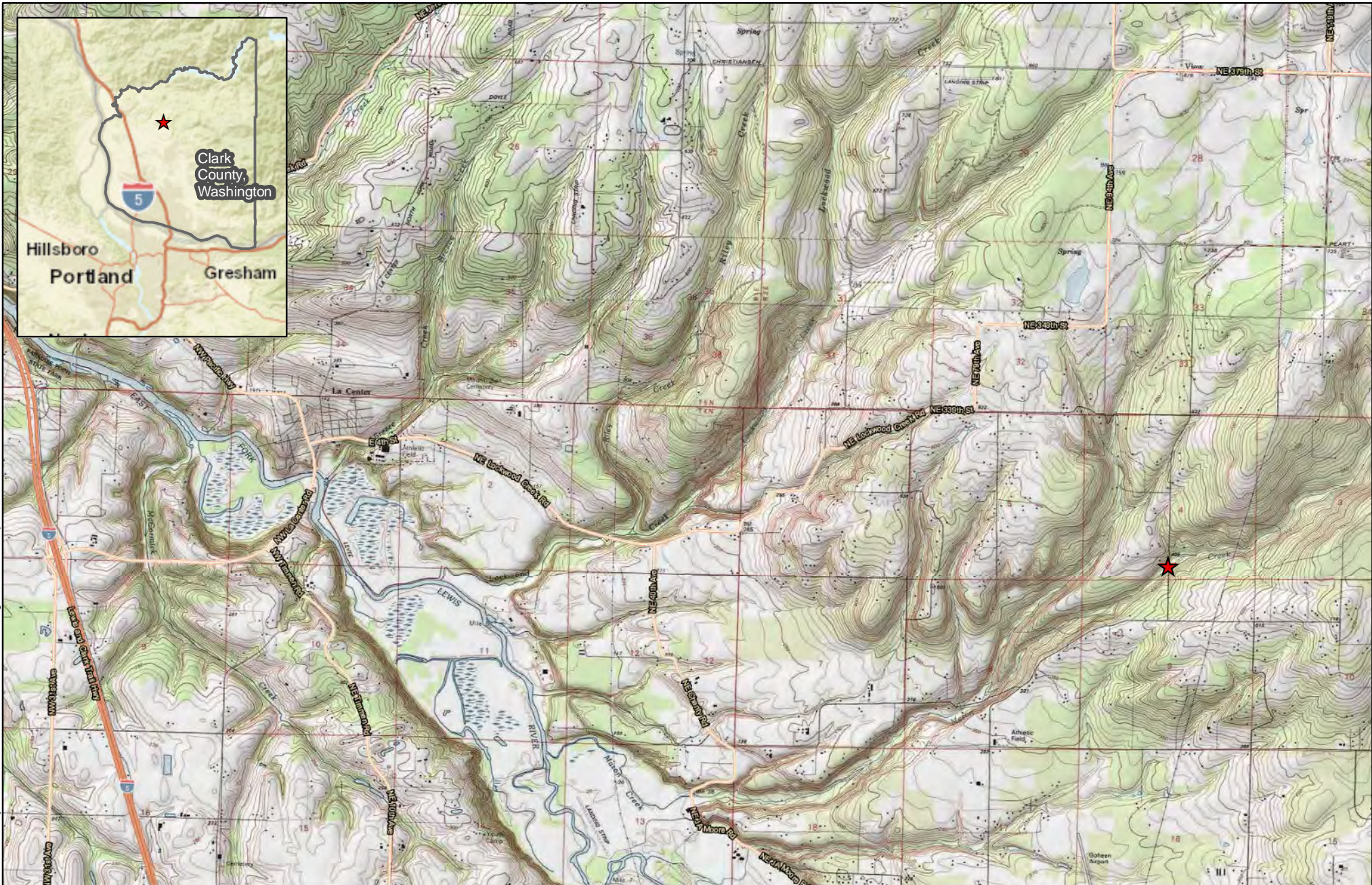
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# Appendix A: Figures

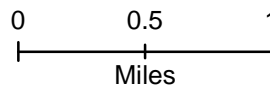
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K:\Clark County\Mason\_Creek\WXD\DeLineation\_2019\Fig1\_Location\_Map.mxd



**Legend**

★ Project Location



**FIGURE 1  
LOCATION MAP**

Mason Creek Fish Passage Project  
Wetland Delineation Report  
Clark County, Washington

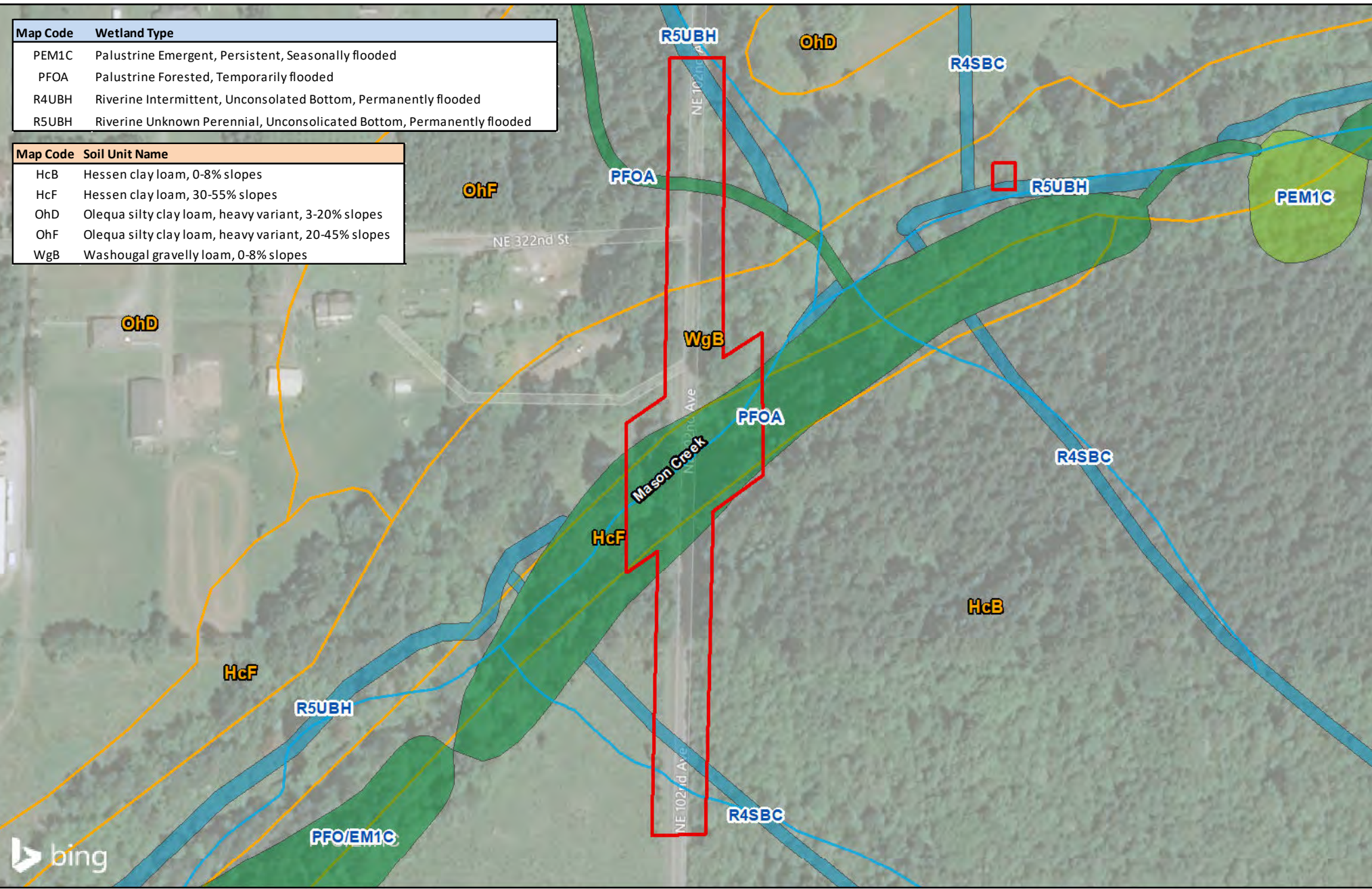
December 2019



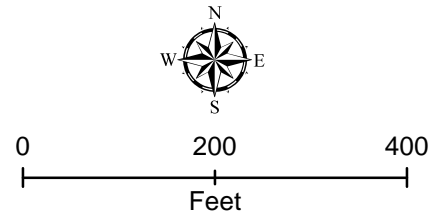
Map Code	Wetland Type
PEM1C	Palustrine Emergent, Persistent, Seasonally flooded
PFOA	Palustrine Forested, Temporarily flooded
R4UBH	Riverine Intermittent, Unconsolidated Bottom, Permanently flooded
R5UBH	Riverine Unknown Perennial, Unconsolidated Bottom, Permanently flooded

Map Code	Soil Unit Name
HcB	Hessen clay loam, 0-8% slopes
HcF	Hessen clay loam, 30-55% slopes
OhD	Olequa silty clay loam, heavy variant, 3-20% slopes
OhF	Olequa silty clay loam, heavy variant, 20-45% slopes
WgB	Washougal gravelly loam, 0-8% slopes

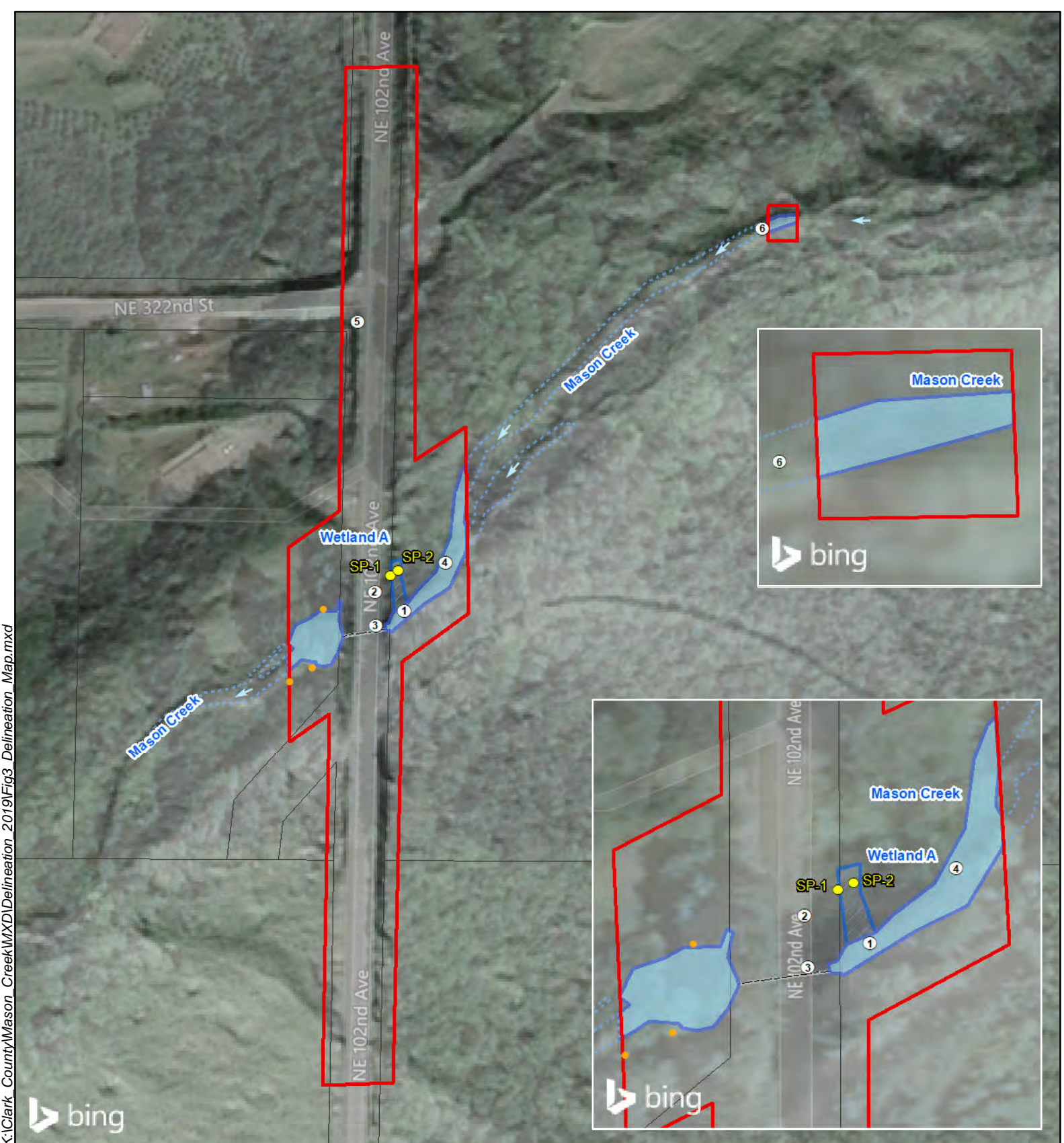
K:\Clark County\Mason\_Creek\MXD\Delineation\_2019\Fig2\_Soil\_Wetland\_Inventories.mxd



- Legend**
- Wetland Delineation Study Areas
  - Waterway (Clark County)
  - Soil Boundary (NRCS)



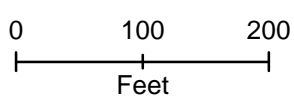
**FIGURE 2**  
**SOIL & WETLAND INVENTORIES**  
 Mason Creek Fish Passage Project  
 Wetland Delineation Report  
 Clark County, Washington



K:\Clark\_County\Mason\_Creek\WXDI\Delineation\_2019\Fig3\_Delineation\_Map.mxd

**Legend**

- Wetland Study Areas
- Tax Parcel
- Wetland
- Water
- Offsite Water (approx.)
- ↙ Flow Direction
- Culvert
- Sample Plot
- Soil Check Pit
- Photo

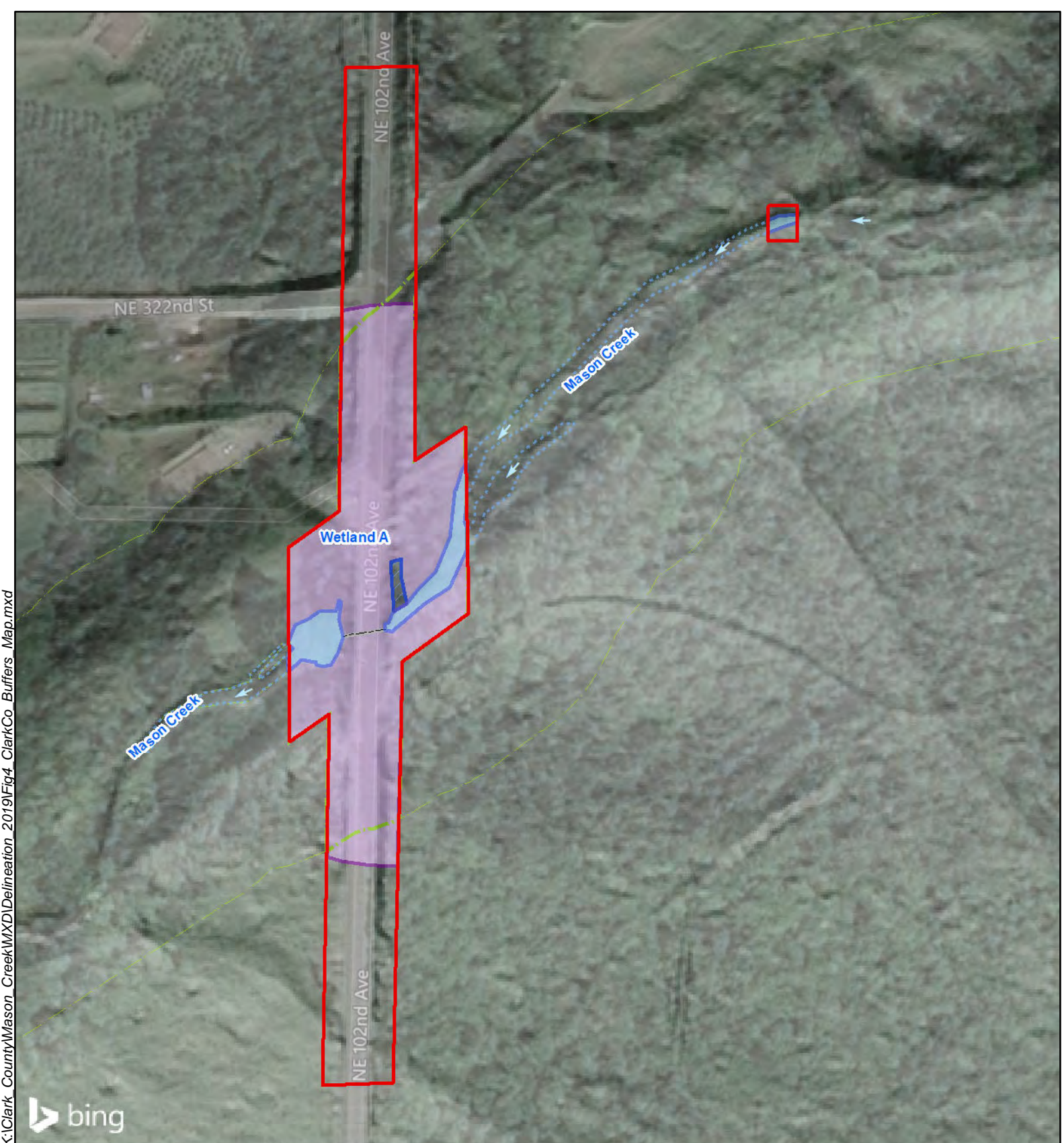


**FIGURE 3  
WETLAND DELINEATION MAP**

Mason Creek Fish Passage Project  
Wetland Delineation Report  
Clark County, Washington

December, 2019



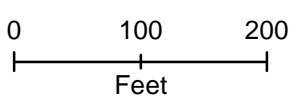


K:\Clark\_County\Mason\_Creek\WXDI\Delineation\_2019\Fig4\_ClarCo\_Buffers\_Map.mxd

**Legend**

- Wetland Study Areas
- Wetland
- Water
- Offsite Water (approx.)
- 300-Foot Clark County Wetland Buffer
- 200-Foot Riparian Buffer
- Offsite 200-Foot Riparian Buffer (approx.)

- ↙ Flow Direction
- Culvert



**FIGURE 4  
CLARK COUNTY BUFFERS MAP**

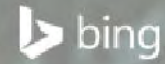
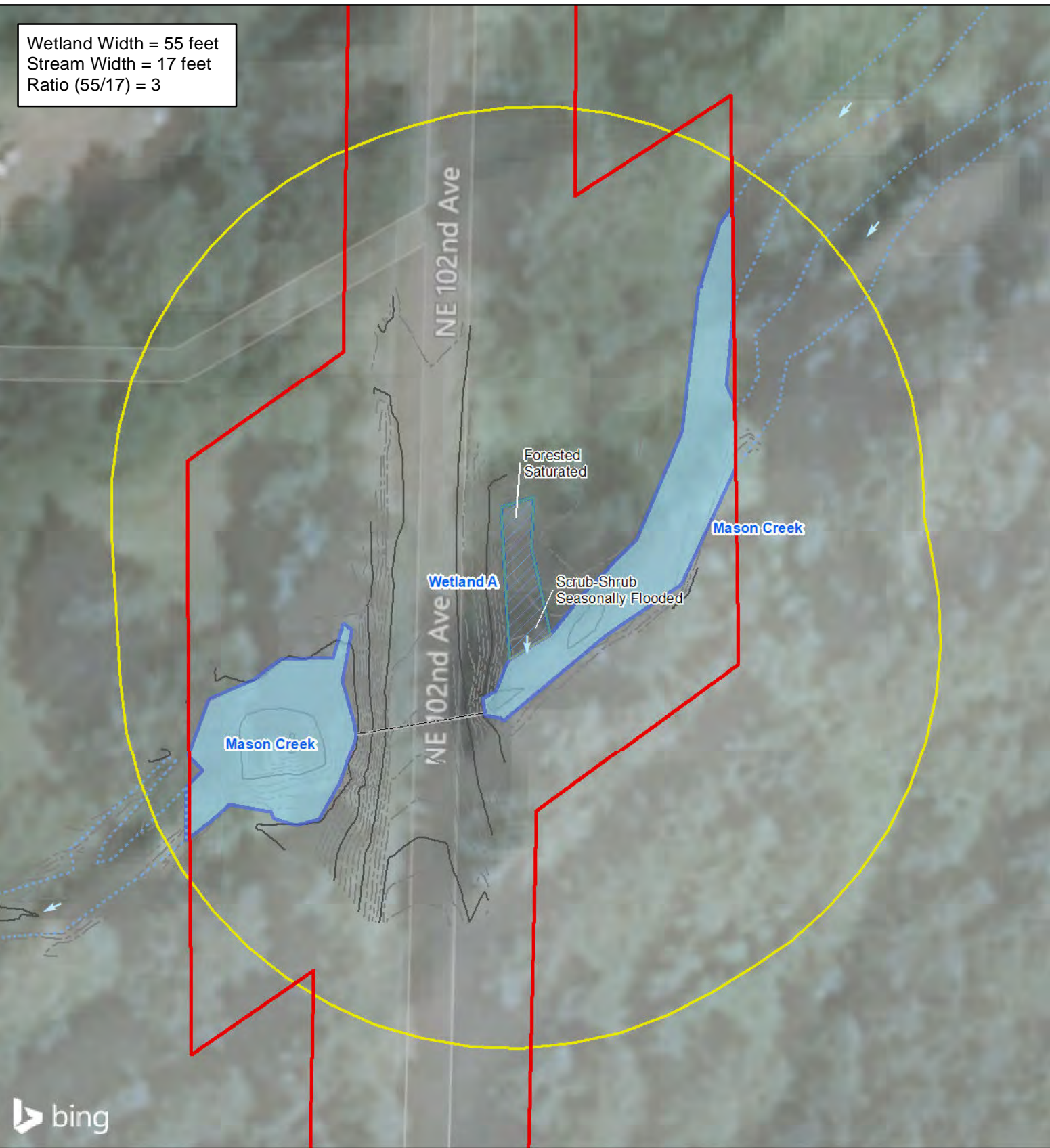
Mason Creek Fish Passage Project  
Wetland Delineation Report  
Clark County, Washington

December, 2019



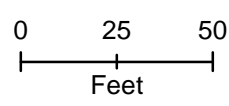
Wetland Width = 55 feet  
 Stream Width = 17 feet  
 Ratio (55/17) = 3

K:\Clark\_County\Mason\_Creek\WXDI\Delineation\_2019\Fig5a\_150ft\_Cowardin\_Hydro\_Map.mxd



**Legend**

- Wetland Delineation Study Area
- Wetland
- Water
- Offsite Water (approx.)
- 150-Foot Buffer
- ↗ Flow Direction
- Culvert
- Major Contour
- Minor Contour



**FIGURE 5a**  
**WETLAND RATING MAP**  
**150-Foot Buffer, Cowardin, Hydroperiods**

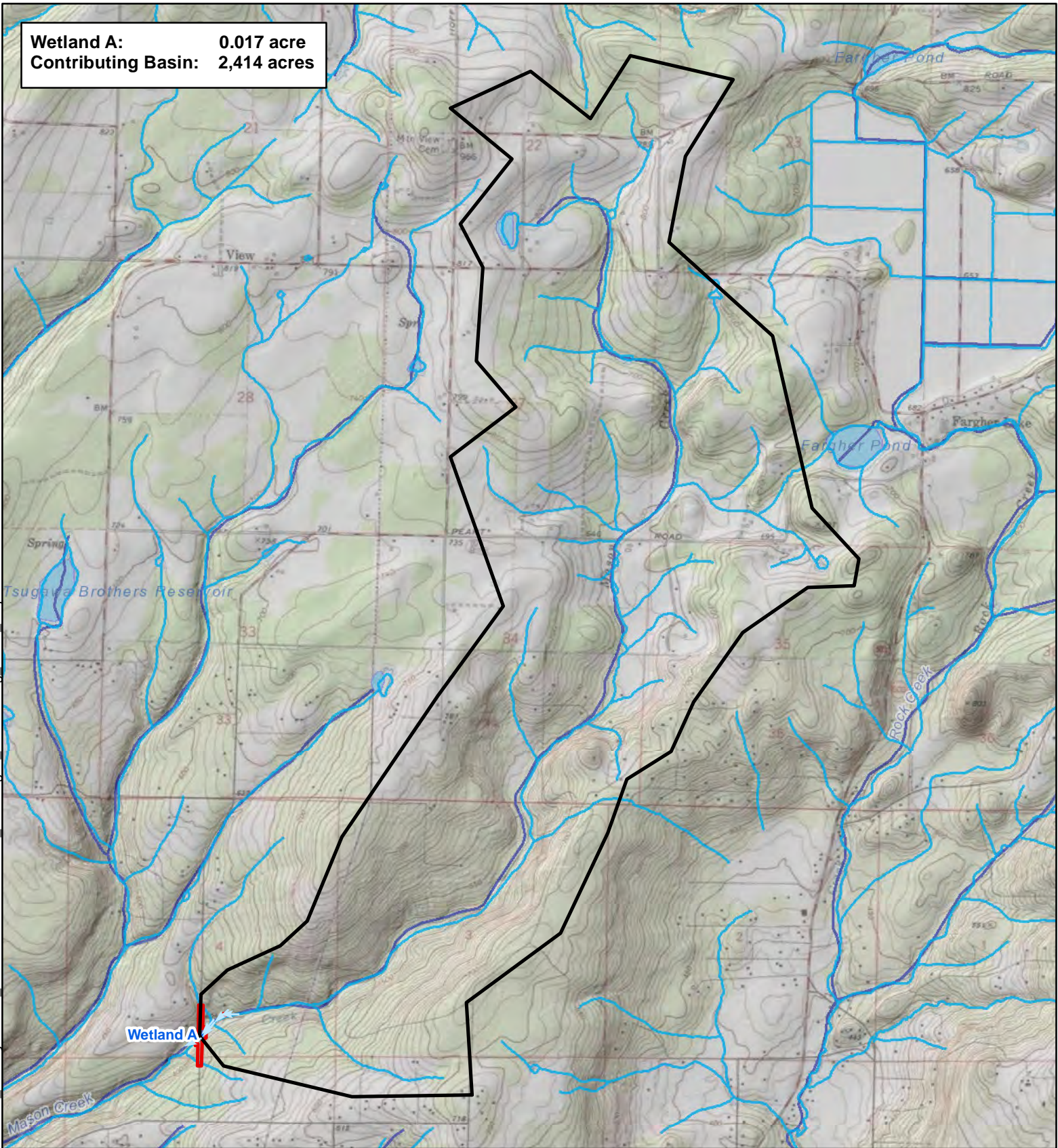
Mason Creek Fish Passage Project  
 Wetland Delineation Report  
 Clark County, Washington

December, 2019





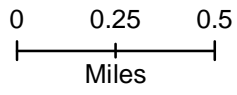
**Wetland A:** 0.017 acre  
**Contributing Basin:** 2,414 acres



K:\Clark County\Mason\_Creek\WXDI\Delineation\_2019\Fig5b\_Contributing\_Basin\_Map.mxd

**Legend**

- Wetland Delineation Study Areas
- Wetland A
- Contributing Basin
- Waterway (Clark County)
- NHD Line



**FIGURE 5b**  
**WETLAND RATING MAP**  
**Contributing Basin**

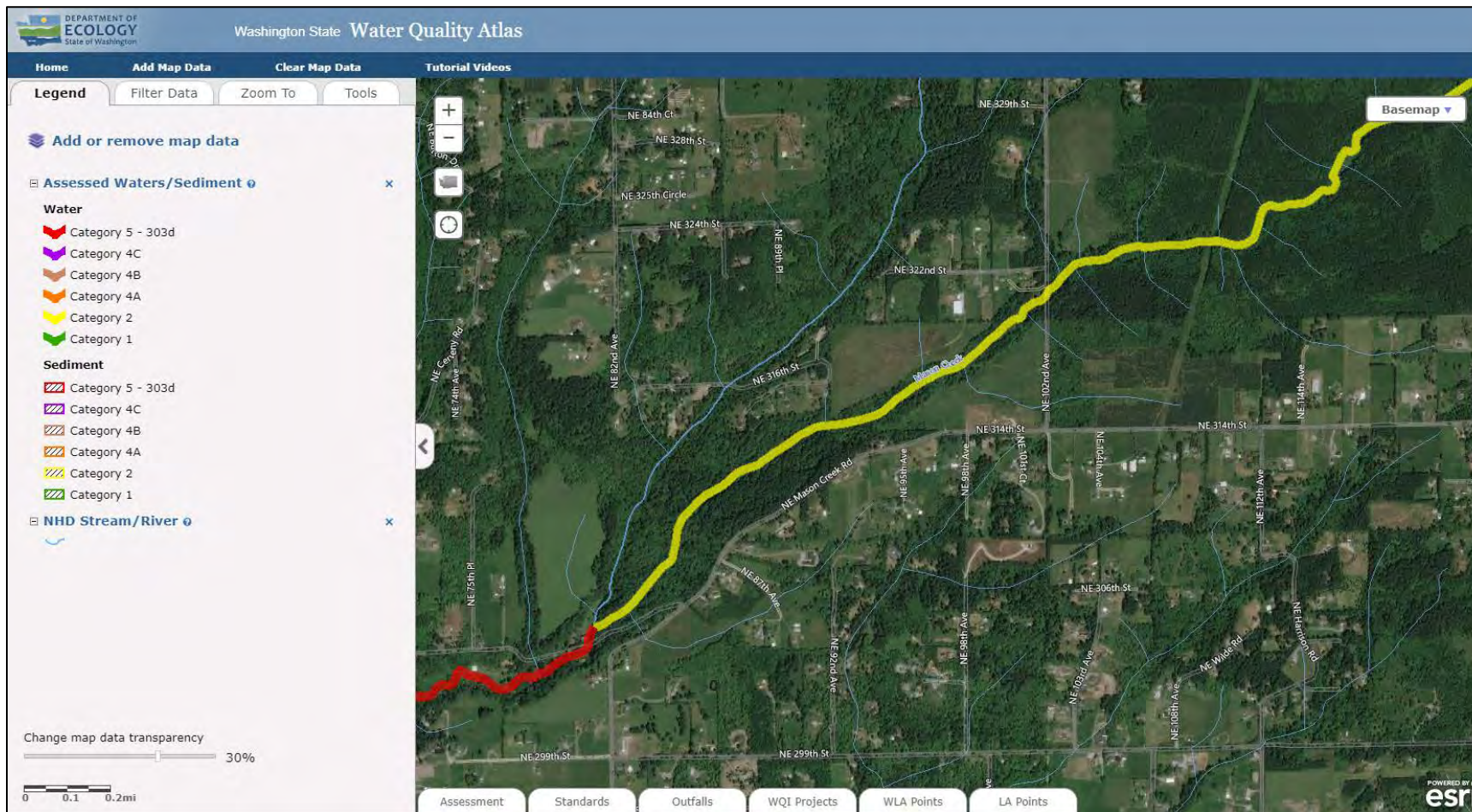
Mason Creek Fish Passage Project  
 Wetland Delineation Report  
 Clark County, Washington

December, 2019



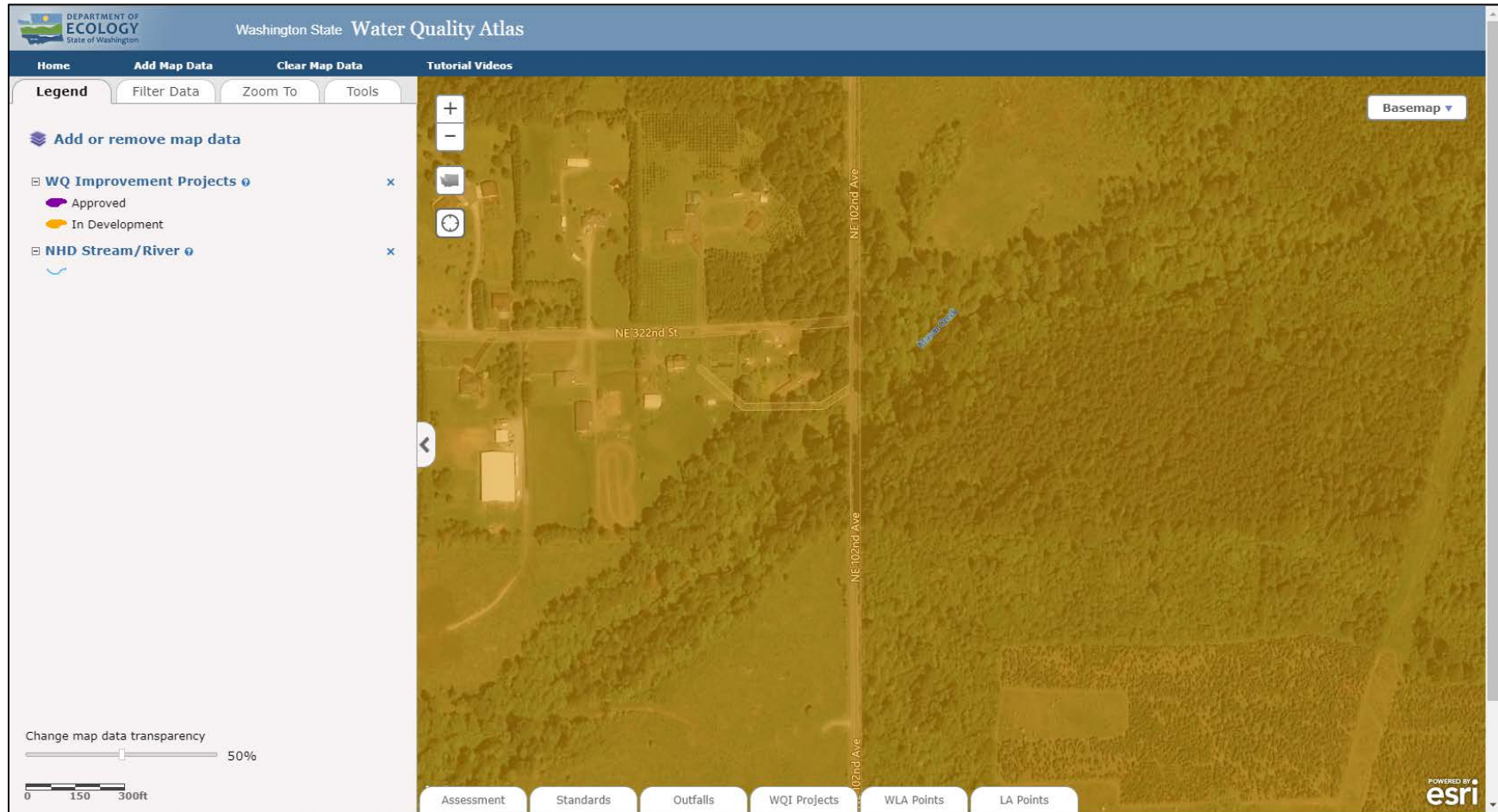


Figure 5d – 303(d) Listed Waters Screenshot



Mason Creek Fish Passage Project  
Wetland Delineation Report  
Clark County, Washington

Figure 5e – TMDL Screenshot




Mason Creek Fish Passage Project  
Wetland Delineation Report  
Clark County, Washington

# Appendix B: Photographs

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<b>Project:</b> Mason Creek Fish Passage		<b>SITE PHOTOS</b>	<b>AECOM Project No.</b> 60615503
<b>Photo No.</b> <b>1</b>	<b>Date</b> 10/10/19		
<b>Direction Photo Taken:</b> North			
<b>Description:</b> The southern portion of Wetland A connects to Mason Creek. This portion of the wetland is regularly flooded by Mason Creek and contains a mix of invasive (field bindweed, reed canarygrass, Himalayan blackberry) as well as native vegetation.			


<b>Photo No.</b> <b>2</b>	<b>Date:</b> 10/10/19		
<b>Direction Photo Taken:</b> Northeast			
<b>Description:</b> Photo shows the northern portion of Wetland A where it extends up a topographically defined swale. The steep road embankment of NE 102nd Avenue (bottom left) defines the western boundary of the wetland.			

<b>Photo No.</b> <b>3</b>	<b>Date:</b> 10/10/19
<b>Direction Photo Taken:</b>  East	
<b>Description:</b>  Photo shows Mason Creek just before it enters the culvert inlet at NE 102nd Avenue (bottom). Trees and shrubs that make up the riparian area provide shade and habitat benefits to the creek.	



<b>Photo No.</b> <b>4</b>	<b>Date:</b> 10/10/19
<b>Direction Photo Taken:</b>  Northeast	
<b>Description:</b>  Just upstream of the proposed culvert replacement project, a large fallen log straddles Mason Creek, providing shade and habitat complexity.	



<b>Photo No.</b> <b>5</b>	<b>Date:</b> 10/10/19	
<b>Direction Photo Taken:</b>  North		
<b>Description:</b>  NE 102nd Avenue slopes down toward Mason Creek from the north and south. Road runoff is conveyed to the creek via vegetated roadside ditches.		

<b>Photo No.</b> <b>6</b>	<b>Date:</b> 10/10/19	
<b>Direction Photo Taken:</b>  East		
<b>Description:</b>  In addition to replacing the culvert at NE 102nd Avenue, the Mason Creek Fish Passage Barrier Removal project also proposes to cut a large notch into the natural log barrier shown.		



# Appendix C: Wetland Determination Data Forms

<b>Sample Plot #</b>	<b>Latitude</b>	<b>Longitude</b>
SP-1	45.853616	-122.568547
SP-2	45.853635	-122.568506

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

Project/Site: Mason Creek Culvert City/County: Clark Sampling Date: 10/9/2019  
 Applicant/Owner: County State: OR WA Sampling Point: 1  
 Investigator(s): N. Herlocker Section, Township, Range: \_\_\_\_\_  
 Landform (hillslope, terrace, etc.): swale in terrace Local relief (concave, convex, none): concave Slope (%): 5  
 Subregion (LRR): A Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: \_\_\_\_\_  
 Soil Map Unit Name: HcF - Hessen clay loam - P-20% slope NWI classification: \_\_\_\_\_  
 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? Yes \_\_\_\_\_ No   
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic?  (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Remarks: <u>Swale at base of road embankment. Backwaters at lower end from Mason Creek.</u>	

**VEGETATION – Use scientific names of plants.**

Tree Stratum (Plot size: <u>30</u> )	Absolute % Cover	Dominant Species?	Indicator Status		
1. <u>Fraxinus latifolia</u>	<u>25</u>	<input checked="" type="checkbox"/>	<u>FACW</u>	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>6</u> (A) Total Number of Dominant Species Across All Strata: <u>7</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>86%</u> (A/B)	
2. _____					
3. _____					
4. _____					
<u>25</u> = Total Cover				<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____	
Sapling/Shrub Stratum (Plot size: <u>5</u> )	Absolute % Cover	Dominant Species?	Indicator Status		
1. <u>Rubus armeniacus</u>	<u>15</u>	<input checked="" type="checkbox"/>	<u>FAC</u>		
2. _____					
3. _____					
4. _____					
5. _____					
<u>15</u> = Total Cover					
Herb Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status		
1. <u>Athyrium filix-femina</u>	<u>35</u>	<input checked="" type="checkbox"/>	<u>FAC</u>	<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants <sup>1</sup> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
2. <u>Tolmeia menziesii</u>	<u>45</u>	<input checked="" type="checkbox"/>	<u>FAC</u>		
3. <u>Phalaris arundinacea</u>	<u>20</u>	<input checked="" type="checkbox"/>	<u>FACW</u>		
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
9. _____					
10. _____					
11. _____					
<u>100</u> = Total Cover					
Woody Vine Stratum (Plot size: <u>5</u> )	Absolute % Cover	Dominant Species?	Indicator Status		
1. <u>Convolvulus arvensis</u> *	<u>20</u>	<input checked="" type="checkbox"/>	<u>NOL</u>	<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No _____	
2. _____					
<u>20</u> = Total Cover					
% Bare Ground in Herb Stratum <u>0</u>					
Remarks: <u>* Rooted in embankment</u>					

**SOIL**

Sampling Point: 1

**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 <sup>1</sup>		
0-9	10YR 8/2	100	—	—	—	Silm	
9-20	10YR 4/2	98	10YR 4/6	2	C	M Silm	

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

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

<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	

**Restrictive Layer (if present):**  
 Type: \_\_\_\_\_  
 Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes  No

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators:**

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

**Field Observations:**

Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____	<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): <u>12</u>	
Saturation Present? (includes capillary fringe) Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): <u>10</u>	

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

Remarks:

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

Project/Site: Mason Creek Culvert City/County: Clark Sampling Date: 10/9/2019  
 Applicant/Owner: County State: OR WA Sampling Point: 2  
 Investigator(s): N. Herlocker Section, Township, Range: \_\_\_\_\_  
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): minor slope Slope (%): 5  
 Subregion (LRR): A Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: \_\_\_\_\_  
 Soil Map Unit Name: HCF-Hessen clay loam, 8-20% slopes NWI classification: \_\_\_\_\_  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Yes \_\_\_\_\_ No x  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? N (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 <u>x</u> No _____	Hydic Soil Present? Yes _____ No <u>x</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>x</u>
Wetland Hydrology Present? Yes _____ No <u>x</u>		

Remarks:

**VEGETATION – Use scientific names of plants.**

Tree Stratum (Plot size: <u>30</u> )	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>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>75</u> (A/B)
1. <u>Fraxinus latifolia</u>	<u>15</u>	<u>x</u>	<u>FACW</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
<u>15</u> = Total Cover				
Sapling/Shrub Stratum (Plot size: <u>5</u> )	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
1. <u>Sambucus racemosa</u>	<u>15</u>	<u>x</u>	<u>FACU</u>	
2. <u>Rosa nutkana</u>	<u>5</u>	_____	<u>FAC</u>	
3. <u>Rubus armeniacus</u>	<u>10</u>	<u>x</u>	<u>FAC</u>	
4. <u>Rubus spectabilis</u>	<u>5</u>	_____	<u>FAC</u>	
5. _____	_____	_____	_____	
<u>35</u> = Total Cover				
Herb Stratum (Plot size: <u>5</u> )	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators: ___ 1 - Rapid Test for Hydrophytic Vegetation <u>x</u> 2 - Dominance Test is >50% ___ 3 - Prevalence index is ≤3.0 <sup>1</sup> ___ 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) ___ 5 - Wetland Non-Vascular Plants <sup>1</sup> ___ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Polystichum munitum</u>	<u>15</u>	_____	<u>FACU</u>	
2. <u>Tolmeia menziesii</u>	<u>50</u>	<u>x</u>	<u>FAC</u>	
3. <u>Athyrium filix-femina</u>	<u>15</u>	_____	<u>FAC</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
<u>90</u> = Total Cover				
Woody Vine Stratum (Plot size: <u>5</u> )	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Present? Yes <u>x</u> No _____
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
<u>0</u> = Total Cover				
% Bare Ground in Herb Stratum <u>1</u>				

Remarks:

**SOIL**

Sampling Point: 2

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-20	10YR 3/2	100	—	—	—	—	Silm	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils <sup>3</sup> :
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Dark Surface (F6)	<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Depleted Dark Surface (F7)	
	<input type="checkbox"/> Redox Depressions (F8)	

**Restrictive Layer (if present):**  
 Type: \_\_\_\_\_  
 Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes \_\_\_\_\_ No

Remarks: Consistent color / texture to 20" bgs ; no redox

**HYDROLOGY**

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

**Field Observations:**

Surface Water Present? Yes \_\_\_\_\_ 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:

# Appendix D: Wetland Rating System Forms

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## RATING SUMMARY – Western Washington

Name of wetland (or ID #):     A     Date of site visit:     10/10/2019    

Rated by     Brian Fletcher     Trained by Ecology?  Yes  No Date of training     4/30/2015    

HGM Class used for rating     Riverine & Fresh Water Tidal     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, Imagery ESRI Online    

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

### 1. Category of wetland based on FUNCTIONS

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

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

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

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
<i>List appropriate rating (H, M, L)</i>				
Site Potential	M	M	H	
Landscape Potential	M	M	H	
Value	M	M	M	<b>Total</b>
<b>Score Based on Ratings</b>	<b>6</b>	<b>6</b>	<b>8</b>	<b>20</b>

### 2. Category based on SPECIAL CHARACTERISTICS of wetland

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

## Maps and Figures required to answer questions correctly for Western Washington

### Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	D 1.3, H 1.1, H 1.4	
Hydroperiods	D 1.4, H 1.2	
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 4.3, 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 unit is found (from web)	D 3.3	

### Riverine Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	5a
Hydroperiods	H 1.2	5a
Ponded depressions	R 1.1	5a
Boundary of area within 150 ft of the wetland ( <i>can be added to another figure</i> )	R 2.4	5a
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	5a
Width of unit vs. width of stream ( <i>can be added to another figure</i> )	R 4.1	5a
Map of the contributing basin	R 2.2, R 2.3, R 5.2	5b
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	5c
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	5d
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	R 3.2, R 3.3	5e

### Lake Fringe Wetlands

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

### Slope Wetlands

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





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

NO - go to 7

YES - The wetland class is **Depressional**

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

NO - go to 8

YES - The wetland class is **Depressional**

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

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

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

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

NOTES and FIELD OBSERVATIONS:

Slope + Riverine = Riverine

Wetland name or number A

**RIVERINE AND FRESHWATER TIDAL FRINGE WETLANDS**

**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 $> \frac{3}{4}$ area of wetland	points = 8	2
Depressions cover $> \frac{1}{2}$ area of wetland	points = 4	
Depressions present but cover $< \frac{1}{2}$ area of wetland	points = 2	
No depressions present	points = 0	
R 1.2. Structure of plants in the wetland (areas with >90% cover at person height, <b>not</b> Cowardin classes)		
Trees or shrubs $> \frac{2}{3}$ area of the wetland	points = 8	8
Trees or shrubs $> \frac{1}{3}$ area of the wetland	points = 6	
Herbaceous plants (> 6 in high) $> \frac{2}{3}$ area of the wetland	points = 6	
Herbaceous plants (> 6 in high) $> \frac{1}{3}$ area of the wetland	points = 3	
Trees, shrubs, and ungrazed herbaceous $< \frac{1}{3}$ area of the wetland	points = 0	
Total for R 1	Add the points in the boxes above	10

**Rating of Site Potential** If score is: 12-16 = H X 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	0
R 2.2. Does the contributing basin to the wetland include a UGA or incorporated area?	Yes = 1 No = 0	0
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	0
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
Other sources <u>NE 102nd Road runoff</u>	Yes = 1 No = 0	
Total for R 2	Add the points in the boxes above	2

**Rating of Landscape Potential** If score is: 3-6 = H X 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?		
(approximately 1.3 mile downstream)	Yes = 1 No = 0	0
R 3.2. Is the wetland along a stream or river that has TMDL limits for nutrients, toxics, or pathogens?	Yes = 1 No = 0	1
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 X 1 = M 0 = L

Record the rating on the first page

Wetland name or number  A

**RIVERINE AND FRESHWATER TIDAL FRINGE WETLANDS**

**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 20 If the ratio is 10-20 If the ratio is 5-<10 If the ratio is 1-<5 If the ratio is < 1	points = 9 points = 6 points = 4 points = 2 points = 1	2
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 &gt;90% cover at person height. These are NOT Cowardin classes).</i> Forest or shrub for > <sup>1</sup> / <sub>3</sub> area OR emergent plants > <sup>2</sup> / <sub>3</sub> area Forest or shrub for > <sup>1</sup> / <sub>10</sub> area OR emergent plants > <sup>1</sup> / <sub>3</sub> area Plants do not meet above criteria	points = 7 points = 4 points = 0	7
Total for R 4	Add the points in the boxes above	9

**Rating of Site Potential** If score is:  12-16 = H   X   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	1
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	1

**Rating of Landscape Potential** If score is:  3 = H   X   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 wetland has flooding problems that result in damage to human or natural resources (e.g., houses or salmon redds) Surface flooding problems are in a sub-basin farther down-gradient No flooding problems anywhere downstream	points = 2 points = 1 points = 0	1
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   X   1 = M   0 = L  *Record the rating on the first page*

**These questions apply to wetlands of all HGM classes.**

**HABITAT FUNCTIONS** - Indicators that site functions to provide important habitat

H 1.0. Does the site have the potential to provide habitat?

H 1.1. Structure of plant community: *Indicators are Cowardin classes and strata within the Forested class. Check the Cowardin plant classes in the wetland. Up to 10 patches may be combined for each class to meet the threshold of ¼ ac or more than 10% of the unit if it is smaller than 2.5 ac. Add the number of structures checked.*

- |                                                                                                                                                                                          |                                  |   |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|---|
| <input type="checkbox"/> Aquatic bed                                                                                                                                                     | 4 structures or more: points = 4 | 2 |
| <input type="checkbox"/> Emergent                                                                                                                                                        | 3 structures: points = 2         |   |
| <input checked="" type="checkbox"/> Scrub-shrub (areas where shrubs have > 30% cover)                                                                                                    | 2 structures: points = 1         |   |
| <input checked="" type="checkbox"/> Forested (areas where trees have > 30% cover)                                                                                                        | 1 structure: points = 0          |   |
| <i>If the unit has a Forested class, check if:</i>                                                                                                                                       |                                  |   |
| <input checked="" type="checkbox"/> The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the Forested polygon |                                  |   |

H 1.2. Hydroperiods

Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ ac to count (see text for descriptions of hydroperiods).

- |                                                                                                         |                                     |   |
|---------------------------------------------------------------------------------------------------------|-------------------------------------|---|
| <input type="checkbox"/> Permanently flooded or inundated                                               | 4 or more types present: points = 3 | 2 |
| <input checked="" type="checkbox"/> Seasonally flooded or inundated                                     | 3 types present: points = 2         |   |
| <input type="checkbox"/> Occasionally flooded or inundated                                              | 2 types present: points = 1         |   |
| <input checked="" type="checkbox"/> Saturated only                                                      | 1 types present: points = 0         |   |
| <input checked="" type="checkbox"/> Permanently flowing stream or river in, or adjacent to, the wetland |                                     |   |
| <input type="checkbox"/> Seasonally flowing stream in, or adjacent to, the wetland                      |                                     |   |
| <input type="checkbox"/> <b>Lake Fringe wetland</b>                                                     | <b>2 points</b>                     |   |
| <input type="checkbox"/> <b>Freshwater tidal wetland</b>                                                | <b>2 points</b>                     |   |

H 1.3. Richness of plant species

Count the number of plant species in the wetland that cover at least 10 ft<sup>2</sup>. *Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle*

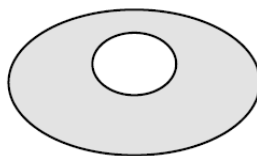
- |                 |                |            |
|-----------------|----------------|------------|
| If you counted: | > 19 species   | points = 2 |
|                 | 5 - 19 species | points = 1 |
|                 | < 5 species    | points = 0 |

H 1.4. Interspersion of habitats

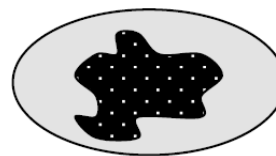
Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always high.*



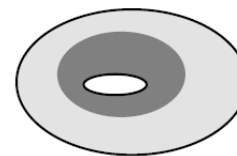
**None** = 0 points



**Low** = 1 point

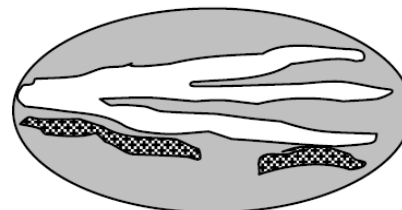
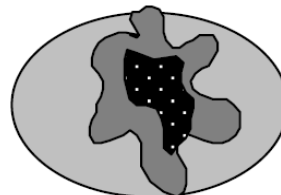
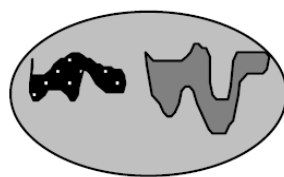


**Moderate** = 2 points



1

All three diagrams in this row are **HIGH** = 3 points



<p><b>H 1.5. Special habitat features:</b>                  Check the habitat features that are present in the wetland. <i>The number of checks is the number of points.</i></p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Large, downed, woody debris within the wetland (&gt; 4 in diameter and 6 ft long)</li> <li><input checked="" type="checkbox"/> Standing snags (dbh &gt; 4 in) within the wetland</li> <li><input checked="" type="checkbox"/> Undercut banks are present for at least 6.6 ft (2 m) <b>and/or</b> overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m)</li> <li><input type="checkbox"/> Stable steep banks of fine material that might be used by beaver or muskrat for denning (&gt; 30 degree slope) OR signs of recent beaver activity are present (<i>cut shrubs or trees that have not yet weathered where wood is exposed</i>)</li> <li><input type="checkbox"/> At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated (<i>structures for egg-laying by amphibians</i>)</li> <li><input checked="" type="checkbox"/> Invasive plants cover less than 25% of the wetland area in every stratum of plants (see H 1.1 for list of strata)</li> </ul>	4
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**Total for H 1** Add the points in the boxes above **10**

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

**H 2.0. Does the landscape have the potential to support the habitat function of the site?**

<p><b>H 2.1 Accessible habitat</b> (include <i>only habitat that directly abuts wetland unit</i>).                  Calculate:                  28 % undisturbed habitat + ( 7 % moderate &amp; low intensity land uses / 2 ) = 31.5%</p> <p>If total accessible habitat is:</p> <ul style="list-style-type: none"> <li>&gt; 1/3 (33.3%) of 1 km Polygon points = 3</li> <li>20 - 33% of 1 km Polygon points = 2</li> <li>10 - 19% of 1 km Polygon points = 1</li> <li>&lt; 10 % of 1 km Polygon points = 0</li> </ul>	2
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<p><b>H 2.2. Undisturbed habitat in 1 km Polygon around the wetland.</b>                  Calculate:                  51 % undisturbed habitat + ( 8 % moderate &amp; low intensity land uses / 2 ) = 55%</p> <ul style="list-style-type: none"> <li>Undisturbed habitat &gt; 50% of Polygon points = 3</li> <li>Undisturbed habitat 10 - 50% and in 1-3 patches points = 2</li> <li>Undisturbed habitat 10 - 50% and &gt; 3 patches points = 1</li> <li>Undisturbed habitat &lt; 10% of 1 km Polygon points = 0</li> </ul>	3
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<p><b>H 2.3 Land use intensity in 1 km Polygon:</b> If</p> <ul style="list-style-type: none"> <li>&gt; 50% of 1 km Polygon is high intensity land use points = (-2)</li> <li>≤ 50% of 1km Polygon is high intensity points = 0</li> </ul>	0
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**Total for H 2** Add the points in the boxes above **5**

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

**H 3.0. Is the habitat provided by the site valuable to society?**

<p><b>H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies?</b> <i>Choose only the highest score that applies to the wetland being rated.</i></p> <p>Site meets ANY of the following criteria: points = 2</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> It has 3 or more priority habitats within 100 m (see next page)</li> <li><input checked="" type="checkbox"/> It provides habitat for Threatened or Endangered species (any plant or animal on the state or federal lists)</li> <li><input type="checkbox"/> It is mapped as a location for an individual WDFW priority species</li> <li><input type="checkbox"/> It is a Wetland of High Conservation Value as determined by the Department of Natural Resources</li> <li><input type="checkbox"/> It has been categorized as an important habitat site in a local or regional comprehensive plan, in a Shoreline Master Plan, or in a watershed plan</li> </ul> <p>Site has 1 or 2 priority habitats (listed on next page) with in 100m points = 1</p> <p>Site does not meet any of the criteria above points = 0</p>	2
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**Rating of Value** If Score is:  2 = H  1 = M  0 = L Record the rating on the first page

## WDFW Priority Habitats

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

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

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

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

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

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

## CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

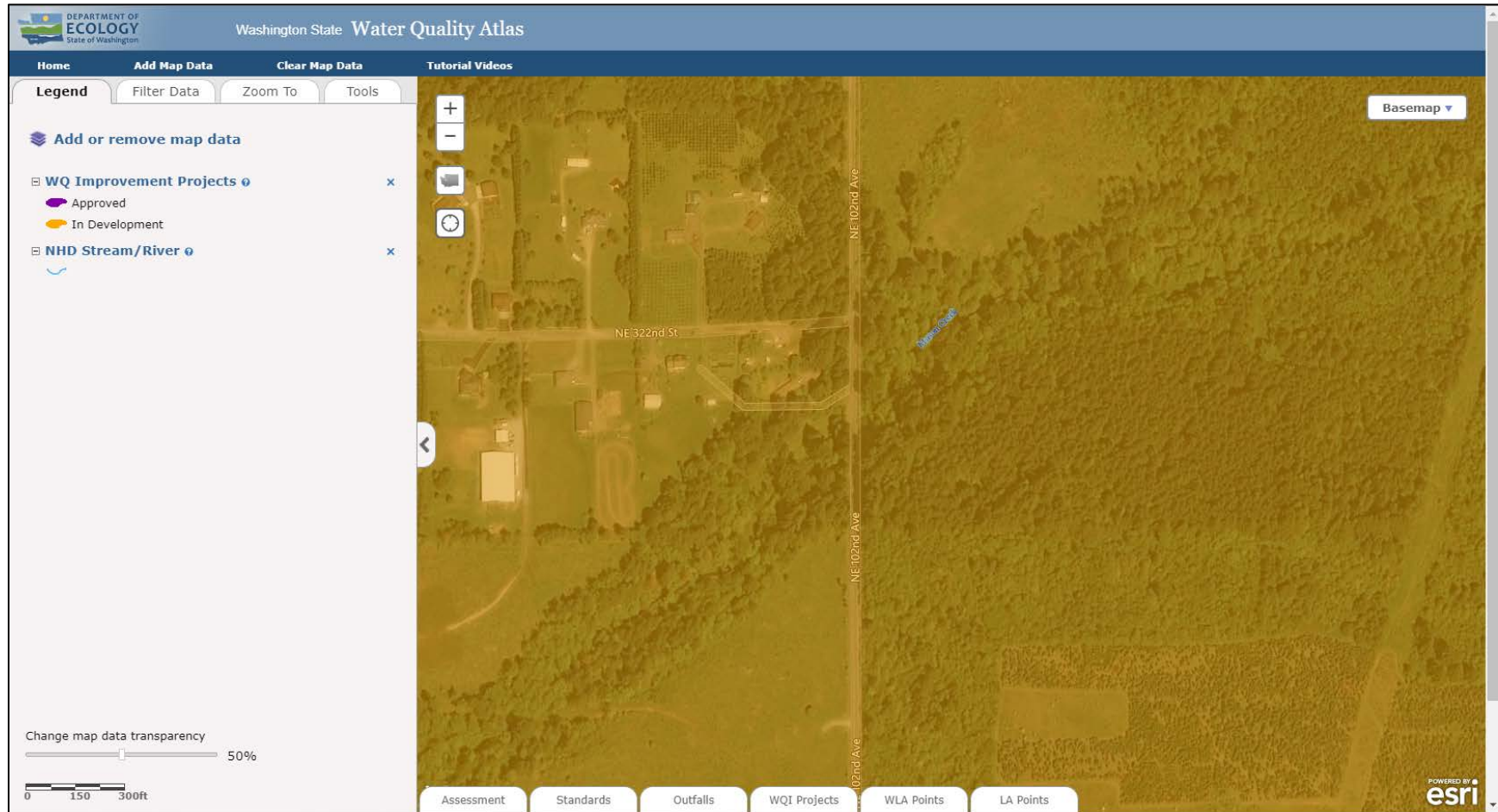
Wetland Type	Category
<i>Check off any criteria that apply to the wetland. List the category when the appropriate criteria are met.</i>	
<p><b>SC 1.0. Estuarine Wetlands</b>                      Does the wetland meet the following criteria for Estuarine wetlands?  <input type="checkbox"/> The dominant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



<p><b>SC 4.0. Forested Wetlands</b>                  Does the wetland have at least <u>1 contiguous acre</u> of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as priority habitats? <b><i>If you answer YES you will still need to rate the wetland based on its functions.</i></b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> <b>Old-growth forests</b> (west of Cascade crest): Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 in (81 cm) or more.</li> <li><input type="checkbox"/> <b>Mature forests</b> (west of the Cascade Crest): Stands where the largest trees are 80-200 years old OR the species that make up the canopy have an average diameter (dbh) exceeding 21 in (53 cm).</li> </ul> <p style="text-align: right;"><input type="checkbox"/> Yes = <b>Category I</b>    <input checked="" type="checkbox"/> No = <b>Not a forested wetland for this section</b></p>	
<p><b>SC 5.0. Wetlands in Coastal Lagoons</b>                  Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks</li> <li><input type="checkbox"/> The lagoon in which the wetland is located contains ponded water that is saline or brackish (&gt; 0.5 ppt) during most of the year in at least a portion of the lagoon (<i>needs to be measured near the bottom</i>)</li> </ul> <p style="text-align: right;"><input type="checkbox"/> Yes - Go to <b>SC 5.1</b>    <input checked="" type="checkbox"/> No = <b>Not a wetland in a coastal lagoon</b></p> <p><b>SC 5.1.</b> Does the wetland meet all of the following three conditions?</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species on p. 100).</li> <li><input type="checkbox"/> At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland.</li> <li><input type="checkbox"/> The wetland is larger than 1/10 ac (4350 ft<sup>2</sup>)</li> </ul> <p style="text-align: right;"><input type="checkbox"/> Yes = <b>Category I</b>    <input type="checkbox"/> No = <b>Category II</b></p>	
<p><b>SC 6.0. Interdunal Wetlands</b>                  Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? <b><i>If you answer yes you will still need to rate the wetland based on its habitat functions.</i></b>                  In practical terms that means the following geographic areas:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Long Beach Peninsula: Lands west of SR 103</li> <li><input type="checkbox"/> Grayland-Westport: Lands west of SR 105</li> <li><input type="checkbox"/> Ocean Shores-Copalis: Lands west of SR 115 and SR 109</li> </ul> <p style="text-align: right;"><input type="checkbox"/> Yes - Go to <b>SC 6.1</b>    <input checked="" type="checkbox"/> No = <b>Not an interdunal wetland for rating</b></p> <p><b>SC 6.1.</b> Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)?  <span style="float: right;"><input type="checkbox"/> Yes = <b>Category I</b>    <input type="checkbox"/> No - Go to <b>SC 6.2</b></span></p> <p><b>SC 6.2.</b> Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger?  <span style="float: right;"><input type="checkbox"/> Yes = <b>Category II</b>    <input type="checkbox"/> No - Go to <b>SC 6.3</b></span></p> <p><b>SC 6.3.</b> Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac?  <span style="float: right;"><input type="checkbox"/> Yes = <b>Category III</b>    <input type="checkbox"/> No = <b>Category IV</b></span></p>	
<p><b>Category of wetland based on Special Characteristics</b>                  If you answered No for all types, enter "Not Applicable" on Summary Form</p>	



Figure 5e – TMDL Screenshot



Mason Creek Fish Passage Project  
Wetland Delineation Report  
Clark County, Washington