



October 2023
Marine Drive Proposed Development Project



Wetland Delineation and Critical Areas Report

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Prepared for ABC Recycling

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ABBREVIATIONS

DGPS	Differential Geographic Positioning System
Ecology	Washington State Department of Ecology
FAC	facultative
FACW	facultative wetland
HGM	Hydrogeomorphic (Classification system)
NRCS	Natural Resource Conservation Service
NWI	National Wetlands Inventory
OBL	obligate wetland
OHWM	ordinary high water mark
PEM	palustrine emergent
PFO	palustrine forested
PHS	Priority Habitats and Species
Project	ABC Recycling Development Project
PSS	Palustrine scrub-shrub
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
WCC	Whatcom County Code
WDFW	Washington Department of Fish and Wildlife

1 Introduction

ABC Recycling is collecting information for proposed development of a property located on Marine Drive in Whatcom County, Washington, Township 38 North, Range 2 East, Section 44. The Study Area consists of an approximately 18-acre portion of a larger parcel. A vicinity map is shown in Figure 1 and an aerial photograph of the Study Area is shown in Figure 2.

This Wetland Delineation and Critical Areas Report for the Marine Drive Proposed Development Project (Project) provides information regarding the presence of wetlands and streams within the property, as defined in the Whatcom County Code (WCC) Critical Areas Chapter 16.16 (Whatcom County 2020). The wetland boundaries provided in this report document the existing conditions within the Study Area and are intended to be used as part of the environmental analysis for proposed development.

In October 2020, wetland scientists from Anchor QEA, LLC, completed field studies and identified three wetlands within the Study Area (Wetlands A, B, and C). Some surface water was present within Wetland A at the time of the delineation in small depressions and a small unmaintained ditch-like feature. Ponded water was also observed to the south of Wetland A in a gravel-lined ditch along the railroad tracks, which is outside of the Study Area. Ponded water in the ditch adjacent to the railroad was not flowing. The gravel ditch did not connect to another water or culvert and it is assumed that water in the ditch infiltrates within the railroad parcel. In addition, natural resource information does not identify any stream systems within the Study Area or within 700 feet of the Study Area. Because no defined channels were observed within the Study Area outside of wetland boundaries, no delineation of channel ordinary high water marks (OHWMs) within the Study Area was performed.

The following sections describe the methods used in the field investigation and Anchor QEA's findings. Section 2 describes the Study Area, and Section 3 describes the findings of the wetland delineation. Wetland field data forms are included in Appendix A, and precipitation data are included in Appendix B. The Washington State Department of Ecology (Ecology) wetland rating forms and associated figures are included in Appendix C. Photographs of wetland features (taken in October 2020) are included in Appendix D.

1.1 Review of Existing Information

As part of the analysis to identify natural resources and critical areas in the Study Area, Anchor QEA wetland scientists reviewed the following sources of information to support field observations:

- Natural Resource Conservation Service (NRCS) Web Soil Survey (USDA 2020)
- U.S. Fish and Wildlife Service (USFWS) Wetlands Mapper for National Wetlands Inventory (NWI) map information (USFWS 2020)
- WCC (Whatcom County 2020)

- Washington Department of Fish and Wildlife (WDFW) Priority Habitats and Species (PHS) maps (WDFW 2020a)
- WDFW SalmonScape website (WDFW 2020b)
- Aerial photographs, Google Earth, October 2020

2 Study Area Description

The Study Area is a rectangular-shaped parcel encompassing approximately 18 acres (Figure 2). The western third and a small portion of the eastern edge of the Study Area are undeveloped and the rest is a mix of staging area, storage, and active maintenance for shipping and receiving. Vegetation within the undeveloped portions of the Study Area includes a variety of native and non-native tree, shrub, grass, and herbaceous species associated with upland and wetland habitats. The western third of the Study Area is forested and dominated by deciduous trees with a few conifers and a dense understory of native shrubs. The eastern end of the parcel is a dense scrub-shrub habitat dominated by primarily invasive species. The developed central core of the parcel has little to no vegetation and is primarily compacted gravel, rock, and recycled crushed concrete.

Land use surrounding the Study Area is dominated by active railroad tracks to the south, a paved two lane road (Marine Drive) with sidewalks to the north, an undeveloped forested/scrub-shrub area to the west, and commercial property with a parking lot and mowed and maintained grass to the east. A property (Lehigh Cement) with industrial land use is located south of the Study Area across the railroad tracks.

2.1 Topography

The topography of the Study Area is relatively level, with higher elevation to the northwest of 101 feet and sloping gradually to the low elevation at 71 feet in the southeast extent of the parcel. There are gentle slopes in the western forested area and the eastern end but relatively no slope in the developed interior. The forested area includes a mosaic of upland hummocks and wetland depressions.

2.2 Soils

The NRCS Web Soil Survey (USDA 2020) identifies one soil series within the Study Area: Urban land–Whatcom–Labounty complex, 0% to 8% slopes. The NRCS identifies portions of the Whatcom–Labounty complex as hydric with non-hydric inclusions. Approximately half of the Study Area also has modified soils that support historical and current industrial uses of storage/staging activities. The soils are modified with crushed concrete, angular rock, and mixed grades of sand and fines.

In Section 3.2, Wetland Delineation Results, sample plot soil profiles are described for the wetlands within the Study Area. Soils data collected at each sample plot are provided in the field data forms in Appendix A. Soils observed in the sample plots were generally consistent in texture, color, and soil profile with the mapped soil series.

2.3 Hydrology

The Project is located in the Nooksack Basin Water Resource Inventory Area 1 (Ecology 2019). Hydrologic characteristics in the Study Area are influenced by regional groundwater, direct precipitation, and surface water runoff. No defined stream channels were identified within the Study Area during the investigation; however, a small ditch-like channel was observed within Wetland A. There is an unnamed SalmonScape-mapped intermittent/ephemeral stream located about 750 feet west of the Study Area. Another SalmonScape-mapped perennial stream (Little Squalicum Creek) is approximately 1,400 feet east of the Study Area (WDFW 2020b). At the time of the delineation, water was present within Wetland A in small depressions and a unmaintained ditch-like channel. .

Precipitation levels in Bellingham were above average in August but below average in September and October, as shown in the precipitation data in Appendix B.

Sample plot hydrology is described for the wetlands in Section 3.2, Wetland Delineation Results. Hydrology data collected at each sampling plot are provided in the field data forms in Appendix A.

2.4 Plant Communities and Habitats

Vegetation within the Study Area includes a variety of native and non-native tree, shrub, grass, and herbaceous species associated with upland and wetland habitat. The western third of the Study Area is dominated by a forested habitat with a dense understory of native shrubs and ferns. The eastern quarter of the Study Area is a mix of mostly native and non-native shrubs and some scattered trees. The USFWS Wetlands Mapper for NWI Map Information identifies two wetlands within the Study Area as palustrine scrub-shrub (PSS) wetland habitats (USFWS 2020). WDFW PHS maps (WDFW 2020a) also identify the same areas as freshwater wetland habitats within the Study Area. Figure 4 shows the NWI information for the Study Area.

Wetland and upland vegetation for the wetland areas is described in Section 3.2, Wetland Delineation Results. Vegetation data collected at each sampling plot are provided in the field data forms in Appendix A.

3 Wetland Delineation

On October 20 and 26, 2020, Anchor QEA wetland scientists performed a wetland delineation and wetland rating analysis of wetland habitat in the Study Area. Three wetlands (Wetlands A, B, and C) were identified and delineated. Wetland A is a narrow depressional and slope wetland system that hugs the eastern extent of the Study Area. Wetland B is a large depressional/slope wetland system located within the forested habitat in the western third of the Study Area and across the north central scrub-shrub extent of the Study Area. Wetland C is a very small isolated depressional wetland in the northwest corner of the forested Study Area.

A complete description of Wetlands A, B, and C is provided in Section 3.2, Wetland Delineation Results. Vegetation, soils, and hydrology data collected at each data plot are provided in the field data forms in Appendix A.

3.1 Methods

This section describes the methodology used to perform the wetland delineation, including the review of existing information (described in Section 1.1) and field investigation procedures. These methods are consistent with current federal and state agency requirements, as well as local (Whatcom County) jurisdiction requirements, for performing wetland delineations and identifying protective wetland buffer widths.

3.1.1 Data Collection

As specified by the WCC (Whatcom County 2020), the wetland delineation was conducted according to the methods defined in the *U.S. Army Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory 1987), the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0)* (USACE 2010), and *Ecology's Washington State Wetland Identification and Delineation Manual* (Ecology 1997). Soil colors were classified by their numerical description, as identified on a Munsell Soil Color Chart (Munsell 1994).

The U.S. Army Corps of Engineers (USACE; Environmental Laboratory 1987) defines wetlands as “those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.” The method for delineating wetlands is based on the presence of three parameters: hydrophytic vegetation, hydric soils, and wetland hydrology. Hydrophytic vegetation is “the macrophytic plant life that occurs in areas where the frequency and duration of inundation or soil saturation produce permanently or periodically saturated soils of sufficient duration to exert a controlling influence on the plant species present.” Hydric soils are “formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part.”

Wetland hydrology “encompasses all hydrologic characteristics of areas that are periodically inundated or have soils saturated to the surface for a sufficient duration during the growing season” (Ecology 1997). Data collection methods for each of these parameters are described in the following subsections.

A total of 14 data plots were sampled and recorded, and each sample plot was identified numerically with odd numbers representing the wetland plot and the even numbers representing the upland plot (e.g., DP-01 [Wet], DP-02 [Up], DP-03 [Wet], DP-04 [Up]). Vegetation, soils, and hydrology information were collected at each of the plots and recorded on field datasheets. Field data forms are provided in Appendix A. Wetland boundaries were determined based on plot data and visual observations of the wetland. Each wetland location, wetland boundary, and data plot location was flagged for potential survey, and recorded using a Trimble Differential Geographic Positioning System (DGPS) unit.

3.1.1.1 Vegetation

Plant species occurring in each plot were recorded on field data forms, with one data form per plot (Appendix A). Percent cover for each plant species was estimated in the plot, and dominant plant species were identified. At each plot, trees within a 30-foot radius, shrubs within a 15-foot radius, and emergents within a 3-foot radius from the center of the plot were identified and recorded. A plant indicator status, designated by USFWS (Reed 1988, 1993), was assigned to each species, and a determination was made as to whether the vegetation in the plot was hydrophytic. To meet the hydrophytic parameter, more than 50% of the dominant species, with 20% or greater cover, must have an indicator of obligate wetland (OBL), facultative wetland (FACW), or facultative (FAC). Table 1 provides the wetland indicator status categories.

Table 1
Wetland Plant Indicator Definitions

Indicator Status	Description
Obligate Wetland (OBL)	Plant species occur almost always in wetlands (estimated probability greater than 99%) under natural conditions.
Facultative Wetland (FACW)	Plant species usually occur in wetlands (estimated probability 67% to 99%) but are occasionally found in non-wetlands.
Facultative (FAC)	Plant species are equally likely to occur in wetlands or non-wetlands (estimated probability 34% to 66%).
Facultative Upland (FACU)	Plant species usually occur in non-wetlands (estimated probability 67% to 99%) but are occasionally found in wetlands.
Obligate Upland (UPL)	Plant species occur almost always in non-wetlands (estimated probability greater than 99%) under natural conditions.

3.1.1.2 Soils

Soils were sampled in each plot and evaluated for hydric soil indicators. Soil pits were dug to a depth of 18 inches, unless prevented by impenetrable substrate. Hydric soil indicators include low soil matrix chroma, gleying, and redoximorphic (or “redox”) features. Redox features are spots of contrasting color that occur within the soil matrix (the predominant soil color). Gleyed soils are predominantly bluish, greenish, or grayish in color. Soils having a chroma of 2 or less are positive indicators of hydric soils (Environmental Laboratory 1987; USACE 2010).

3.1.1.3 Hydrology

Wetland hydrology was evaluated at each plot to determine whether it “encompasses all hydrologic characteristics of areas that are periodically inundated or have soils saturated to the surface for a sufficient duration during the growing season” (Ecology 1997). Field observations of saturation, inundation, and other indicators of wetland hydrology, such as water-stained leaves and drainage patterns in wetlands, were recorded.

3.1.1.4 Other Data Sources

Existing information was referenced to identify potential wetlands or site characteristics indicative of wetlands in the Study Area. The sources of reference information that supported field observations are identified in Section 1.1, Review of Existing Information.

3.1.1 *Wetland Classifications*

Wetland community types are discussed according to the USFWS classification developed by Cowardin et al. (1979) for use in the NWI. This system, published in 1979 by a team of USFWS scientists led by L.M. Cowardin, bases the classification of wetlands on their physical characteristics, such as the general type of vegetation in the wetland (e.g., trees, shrubs, and grass) and how much, and where, water is present in the wetland. The Cowardin system provides a classification for every known wetland type that occurs throughout the United States and, under this system, a wetland can be classified as having one or more wetland classification types. The following Cowardin community types were found during this investigation:

- **Palustrine forested (PFO):** These wetlands have at least 30% cover of woody vegetation that is more than 20 feet high.
- **Palustrine scrub-shrub (PSS):** These wetlands have at least 30% cover of woody vegetation that is less than 20 feet high.
- **Palustrine emergent (PEM):** These wetlands have erect, rooted, herbaceous vegetation present for most of the growing season in most years.

3.1.2 *State Hydrogeomorphic Classification System*

Scientists have come to understand that wetlands can perform functions in different ways. The way a wetland functions depends to a large degree on hydrologic and geomorphic conditions. To recognize these differences among wetlands, a way to group or classify them has been developed. This classification system, called the Hydrogeomorphic (HGM) Classification, groups wetlands into categories based on the geomorphic and hydrologic characteristics that control many functions.

The *Washington State Wetland Rating System – Western Washington: 2014 Update* (Hruby 2014) incorporates the HGM Classification system as part of the questionnaire for characterizing a wetland's functions. The rating system uses only the highest grouping in the classification, i.e., wetland class. Wetland classes are based on geomorphic settings, such as Riverine, Slope, Lake-fringe, or Depressional. A classification key is provided within the rating form to help identify which of the following HGM Classifications apply to the wetland: Riverine, Depressional, Slope, Lake-fringe, Tidal Fringe, or Flats.

3.1.3 *Wetland Ratings*

Wetland ratings were determined using the most current version of Ecology guidance in the *Washington State Wetland Rating System – Western Washington: 2014 Update* (Hruby 2014) and according to Whatcom County wetland rating criteria, as defined in the WCC (Whatcom County 2020).

The system developed by Ecology is used to differentiate wetlands based on their sensitivity to disturbance, their significance in the watershed, their rarity, ability to be replaced, and the beneficial functions they provide to society. The Ecology rating system requires the user to collect specific information about the wetland in a step-by-step process. Three major functions are analyzed (water quality improvement, hydrologic functions, and habitat). Ratings are based on a point system, where points are given if a wetland meets specific criteria related to the wetland's potential and the opportunity to provide certain benefits.

Per Ecology's rating system, wetlands are categorized according to the following criteria and to points given:

- **Category I wetlands (23 or more points)** represent a unique or rare wetland type, are more sensitive to disturbance, or are relatively undisturbed and contain ecological attributes that are impossible to replace within a human lifetime.
- **Category II wetlands (20 to 22 points)** are difficult, though not impossible, to replace, and provide high levels of some functions.

- **Category III wetlands (16 to 19 points)** have moderate levels of functions. They have been disturbed in some ways and are often less diverse or more isolated from other natural resources in the landscape than Category II wetlands.
- **Category IV wetlands (less than 16 points)** have the lowest levels of functions and are often heavily disturbed.

The WCC classifies wetlands into four categories (Categories I, II, III, and IV) based on the updated 2014 Ecology Wetland Rating System for Western Washington (Whatcom County 2020).

3.1.4 Wetland Functional Assessment

The functional values of wetlands were rated according to *Washington State Wetland Rating System – Western Washington: 2014 Update* (Hruby 2014). Using Ecology’s system, wetlands were rated based on a point system where points were awarded to three functional value categories (water quality improvement, hydrologic functions, and habitat). Detailed scoring, based on Ecology wetland rating forms and figures, is provided in Appendix C.

3.2 Wetland Delineation Results

This section describes the methodology used to perform the wetland delineation, including the review of existing information (described in Section 1.1) and field investigation procedures.

3.2.1 Wetland A

Wetland A is an approximately 0.58-acre (25,293-square-foot) wetland with mostly PSS vegetation classes and a small area of PFO with depression and slope HGM classes (Figure 5). Wetland A is a long, narrow system that flanks the northeast and eastern boundary of the Study Area. Due to the narrow wetland shape, habitat features associated with Wetland A are limited; four data plots were established to identify the wetland boundary in key areas that represent the overall vegetation and delineate changes in wetland shape. In addition to the four established data plots, soil and hydrology characteristics were consistently examined throughout the Study Area in both the scrub-shrub and small forested habitats to identify the wetland boundary because vegetation changes between the upland and wetland areas were often very subtle or indistinct. Photographs of Wetland A (taken in October 2020) are presented in Appendix D.

The entire boundary of Wetland A was delineated during the investigation. Wetland A includes two distinct vegetation communities: the northern 95% of the wetland, which is scrub-shrub dominated, and a small patch of forested habitat in the southeast corner. Dominant vegetation in the scrub-shrub habitat includes, Himalayan blackberry (*Rubus armeniacus*: FAC), English hawthorn (*Crataegus monogyna*: FAC), red-twigged dogwood (*Cornus sericea*: FACW), and Chinese privet (*Ligustrum sinense*: FAC). The privet was so dense in areas that no other vegetation was observed due to limited sunlight.

Some emergent species observed in the wetland include reed canarygrass (*Phalaris arundinacea*: FACW) and field horsetail (*Equisetum arvense*: FAC).

The small forested habitat of Wetland A contained the scrub-shrub species but also paper birch (*Betula papyrifera*: FAC) and Scouler's willow (*Salix scouleriana*: FAC). The small forest had a very dense shrub understory of non-native species listed above. The small forested habitat also included a mosaic of hummocks and wetland depressions associated with an old ditch within the wetland boundary.

Dominant buffer vegetation of Wetland A included a maintained mowed lawn to the east and outside of the Study Area. Buffer to the north and south was limited due to paved roads and gravel railroad right-of-way but mostly was dominated by Himalayan blackberry and common snowberry (*Symphoricarpos albus*: FACU). The buffer to the west was more diverse and contained black cottonwood (*Populus trichocarpa*: FAC), red alder (*Alnus rubra*: FAC), Indian plum (*Oemleria cerasiformis*: FACU), and Himalayan blackberry.

Soils in the Wetland A scrub-shrub and forested habitat typically ranged from very dark gray (10YR 3/1) to gray (10YR 5/1) silty loams with redox features typically redish brown (10YR 5/6) to brown (10YR 5/3) below about 10 inches.

Soils in the adjacent forested habitat upland plots typically ranged from very dark grayish brown (10YR 3/2) to dark grayish brown (10YR 4/2) to dark brown (10YR 3/3) silty clay loams and sandy loam with no redox features within 18 inches of the surface. The soils appeared mixed and were likely placed as fill or excavated at one point.

Water was present within Wetland A at the time of the delineation in small depressions and within a small relic ditch that runs north to south. Ponded water was observed extending outside of the wetland within a gravel-lined ditch within the railroad parcel to the south. The ponded water did not connect to another waterbody and appears to infiltrate within the railroad parcel.

In the Wetland A scrub-shrub habitat, soil saturation was often within 12 inches of the surface and the water table was typically located within a few inches below saturation. In small depressions standing water was only a few inches deep, but up to 12 inches deep within the ditch that runs north to south.

Data for Wetland A were collected at four data plots: DP-01 through DP-04 (Appendix A). The wetland plots contained indicators of hydrophytic vegetation, wetland hydrology, and hydric soils. The upland plots typically had indicators of hydrophytic vegetation and no hydrology, and they lacked indicators of hydric soils.

3.2.2 Wetland B

Wetland B is an approximately 4.02-acre (174,985-square-foot) wetland with a PSS and PFO vegetation class and depressional and slope HGM classes (Figure 5). The entire boundary of Wetland B was delineated within the Study Area. Wetland vegetation is dominated by paper birch, Scouler's willow, Pacific willow (*Salix lasiandra*: FACW), red-osier dogwood, twinberry (*Lonicera involucrate*: FAC), and Himalayan blackberry with some understory of piggyback plant (*Tolmiea menziesii*: FAC) field horsetail, and slough sedge (*Carex obnupta*: OBL). Photographs of Wetland B (taken in October 2020) are presented in Appendix D.

Dominant buffer vegetation of Wetland B includes red alder, Big-leaf maple (*Acer macrophyllum*: FACU) western red cedar (*Thuja plicata*: FAC), English hawthorn, Nootka rose (*Rosa nutkana*: FAC), Indian plum, snowberry, and Himalayan blackberry.

Soils consisted of very dark gray (10YR 3/1) to gray (10YR 5/1) silty loams with dark yellowish brown (10YR 5/6) redox features below about 10 inches. Soils in the upland plot were very dark grayish brown (10YR 3/2) to very dark gray (10YR 3/1) silt loam with no redox features within 18 inches of the surface. Upland soils often contained crushed rock and gravel from adjacent industrial areas.

In the Wetland B data plots, soil saturation varied due to the size and slope or depressional elements of the wetland. The water table was typically located within 12 inches of the surface. In some areas no water table was found, but other hydrology indicators were present such as matted leaves, oxidized rhizospheres, and closed depressions with no vegetation, indicating frequent standing water within the wetland. In the upland data plot the only saturation was near the surface due to recent precipitation events.

Data were collected at six data plots: DP-05 through DP-12 (Appendix A). The wetland plots contained indicators of hydrophytic vegetation, wetland hydrology, and hydric soils. The upland plots often had indicators of hydrophytic vegetation, but hydrology and hydric soil indicators were lacking.

3.2.3 Wetland C

Wetland C is an approximately 0.11-acre (4,577-square-foot) wetland with a PSS vegetation class and depressional HGM class (Figure 5). The entire boundary of Wetland C was delineated within the Study Area. Wetland vegetation is dominated by Scouler's willow and red-osier dogwood. The dogwood and willow were so thick that no herbaceous or emergent vegetation was observed. Photographs of Wetland C (taken in October 2020) are presented in Appendix D.

Dominant buffer vegetation of Wetland C was very similar to the buffer of Wetland B and included red alder, Big-leaf maple, paper birch, Western red cedar, Nootka rose, Indian plum, snowberry, and bracken fern (*Pteridium aquilinum*: FACU).

Soils consisted of very dark gray (10YR 3/1) to gray (10YR 5/1) silty loams with dark yellowish brown (10YR 5/6) redox features below about 10 inches. Soils in the upland plot were very dark grayish brown (10YR 3/2) to dark brown (10YR 3/3) silt loam with no redox features within 18 inches of the surface.

In the Wetland C data plots, soil saturation was within 16 inches of the surface but in the middle of the wetland depression, saturation was within 4 inches of the soil surface. Wetland C is a closed depression with no emergent vegetation, indicating frequent standing water within the wetland and low light due to dense shrub-scrub habitat. In the upland data plot the only saturation was near the surface due to recent precipitation events.

Data were collected at two data plots: DP-13 and DP-14 (Appendix A). The wetland plot contained indicators of hydrophytic vegetation, wetland hydrology, and hydric soils. The upland plot had indicators of hydrophytic vegetation, but hydrology and hydric soil indicators were lacking.

3.3 Regulatory Framework

Guidance from USFWS, Ecology, and Whatcom County was used to determine the wetland classifications. Information and excerpts from the specific guidance language are provided in the following subsections.

3.3.1 U.S. Fish and Wildlife Service Classification

The wetlands identified in the Study Area have been classified using the system developed by Cowardin et al. (1979) for use in the NWI. Table 2 lists the USFWS classifications for the wetlands and their connections to surface water.

Table 2
U.S. Fish and Wildlife Service Wetland Classifications

Wetland	USFWS Classification	Surface Water Connection
Wetland A	PSS	None
Wetland B	PFO, PSS	None
Wetland C	PSS	None

3.3.2 Ecology Rating, Classification, and Functions and Values Scores

Per the WCC (Whatcom County 2020), wetland ratings are determined using Ecology’s *Washington State Wetlands Rating System – Western Washington: 2014 Update* (Hruby 2014). Under the 2014

Ecology wetland rating systems, Wetland A is a Category IV wetland and Wetland B and C are rated as Category III wetlands. Table 3 lists the 2014 Ecology and local (Whatcom County) wetland rating and classification.

Table 3
Summary of Wetland Classes and Ratings Using Ecology 2014 Wetlands Rating Systems

Wetland	Area (acres)	HGM Classification	2014 ¹ State Rating (Ecology)	Local Rating (Whatcom County) ²
Wetland A	0.58	Slope and Depressional	IV	IV
Wetland B	4.02	Slope and Depressional	III	III
Wetland C	0.11	Depressional	III	III

Notes:

1. Hruby, T., 2014. *Washington State Wetlands Rating System for Western Washington: 2014 Update*. Publication No. 14-06-029. Olympia, WA: Washington State Department of Ecology.
2. Whatcom County, 2020. Whatcom County Code. Accessed Nov. 2, 2020. Available at: <http://www.codepublishing.com/wa/snohomishcounty/>.

For the 2014 Ecology wetland rating system (Hruby 2014), a low, moderate, or high rating is based on three functions: 1) Water Quality Improvement; 2) Hydrologic; and 3) Habitat. Within each of these three functions are three subfunction categories: 1) Site Potential; 2) Landscape Potential; and 3) Value. Each of these subfunction categories is rated as low, moderate, or high. Wetland functional values and scores for Wetlands A, B, and C under the 2014 Ecology rating system are shown in Table 4. The 2014 Ecology wetland rating forms and figures are provided in Appendix C.

Table 4
Summary of Functions and Values 2014 Wetland Rating Scores

Wetland and Function	Water Quality Improvement	Hydrologic	Habitat	Total Functions Score ¹
Wetland A				
Site Potential	Moderate	Low	Low	-
Landscape Potential	High	High	Low	-
Value	Low	Low	Moderate	-
Score Based on Rating ¹	6	5	4	15
Wetland B				
Site Potential	Moderate	Moderate	Moderate	-
Landscape Potential	High	High	Low	-
Value	Low	Low	Moderate	-
Score Based on Rating ¹	6	6	5	17
Wetland C				

Wetland and Function	Water Quality Improvement	Hydrologic	Habitat	Total Functions Score ¹
Site Potential	Moderate	High	Low	-
Landscape Potential	High	Moderate	Low	-
Value	Low	Low	Moderate	-
Score Based on Rating ¹	6	6	4	16

Note:

1. Potential total score per function is 9, for a potential total score of 27.

3.4 Wetland Functional Assessment

The following subsections provide a description of the functions of Wetlands A, B, and C based on the 2014 Ecology wetland rating system.

3.4.1 Water Quality Improvement Functions

All three wetlands have the opportunity to improve water quality based on their location within a mixed heavy to light industrial environment and the presence of a railroad right-of-way to the south and industrial/commercial land use areas outside the Study Area.

Wetlands A, B, and C have a moderate function score for the “site potential” to improve water quality functions due to the lack of surface water outflows from the wetlands and the depressional nature of the wetlands, which influences their ability to trap sediments during storm events. None of the wetlands have soil characteristics that include clay or organic material, which contributes to the moderate or low function scores.

Wetlands A, B, and C all have a high function score for the “landscape potential” to support water quality functions of the site because of the potential of the surrounding land uses to generate pollutants and discharge stormwater to the wetlands. Past and active homeless encampments within and adjacent to all three wetlands contribute to the high function score.

Wetlands A, B, and C have a low function score to provide water quality improvement “value” to society because they are not located in the vicinity of aquatic resources that are on the Ecology 303(d) list or connected to a waterbody that has a Total Maximum Daily Load for the basin or subbasin. All three wetlands have a low function score because no surface water flows from the wetlands or discharges to other waterbodies outside of the Study Area.

3.4.2 Hydrologic Functions

Wetland A provides a low “site potential” for hydrologic function due to there being an unconstricted outlet but no evidence of ponding within the wetland more than 0.5 foot. Wetlands B

and C both have a high “site potential” due to not having a more constricted or no surface water outflow.

Wetlands A and B provide a high function score for “landscape potential” to improve hydrologic function due to the close proximity to development and active stormwater inputs. Wetland C has a lower “landscape potential” of moderate due to its smaller size and intact forest surrounding more than 75% of its boundary within the Study Area.

All three wetlands have low function scores to provide “value” to society because they are located in a landscape where any surface water infiltrates and does not connect to other waterbodies. Similarly, none of the wetlands are part of a regional flood control plan to maximize storage or reduce flooding downgradient from the Study Area.

3.4.3 *Habitat Functions*

Wetlands A and C have a low function habitat “site potential” score because they lack diversity in Cowardin classes, hydroperiods, and complexity of plant species. Wetland B has a moderate function habitat “site potential” score due to the size of the wetland, diversity of Cowardin plant classes, its complexity, and the occurrence of multiple hydroperiods.

Wetlands A, B, and C have low scores for the “landscape potential” due to the intensity of industrial and commercial development that surrounds the Study Area. There are limited patches of undisturbed habitats within a 1 kilometer of the Study Area. The characteristics of the disturbed habitats surrounding the wetlands and the land-use intensity of the surrounding area limit habitat function.

Wetlands A, B, and C have moderate habitat scores as it relates to habitat “value.” All three wetlands provide habitat functions to society because of the proximity of WDFW priority habitats in the vicinity of the wetlands.

3.5 Whatcom County Wetland Buffer Guidance

Required wetland buffers have been identified according to the current WCC Chapter 16.16.630 (Whatcom County 2020). The WCC identifies minimum protective buffer widths based on the wetland category, land use intensity, and the Ecology habitat rating score, per the 2014 Ecology rating system. Wetlands A is a Category IV with an Ecology habitat rating score of 4. Wetlands B and C are both Category III wetlands with Ecology habitat rating scores of 5 and 4 points respectively.

The limits, extents, and functions of wetland buffers are defined in the Critical Areas Chapter of the WCC. Per WCC 16.16.630 A, “Wetland buffers shall be measured horizontally from a perpendicular line established by the wetland boundary based on the base buffer width identified in Table 1. Buffers shall not include areas that are functionally and effectively disconnected from the wetland by an existing,

legally established road or other substantial developed surface.” The central portion of the Study Area is maintained and has been cleared and regraded or filled as part of historical activities, with storage of equipment scattered throughout, as is shown as “Extent of Historically Developed Area” in Figure 5. This area consists of either compacted gravel, sand, and rock fill or regraded soils and stored equipment from past historical land use activities. Anchor QEA biologists delineated and mapped the maintained fill or regraded area using visual observation, shovel probes, documenting existing site equipment and debris, and collecting locations using a DGPS unit. The historically developed area was mapped west of Wetland A and south and east of Wetland B. The historically developed area was found to be functionally disconnected from the wetland and existing wetland buffers due to the maintained and developed surfaces. Buffers were applied to Wetlands A and B and extended to the edge of the delineated fill following the WCC 16.16.630 A.

Wetlands A and B are both adjacent to Study Area activities that are considered high land use intensity. Wetland A is a Category IV wetland with a habitat rating score of 4, which requires a 50-foot buffer be applied. Wetland B is a Category III wetland with a habitat rating score of 5, which requires a 150-foot buffer be applied due to the high land use intensity. Wetland C is unusual because the adjacent land use intensity is low due to the undisturbed forested habitat that surrounds more than 75% of the wetland. There are currently no proposed changes to the forested area adjacent to Wetland C so a buffer of 50 feet was applied to this Category III wetland. Wetland boundaries and buffers are shown in Figure 5. Table 5 summarizes WCC ratings and buffer widths based on the 2014 Ecology rating system and land use intensity.

**Table 5
Wetland Rating and Standard Buffer Widths**

Wetland	2014 State Rating (Ecology)	Local Rating (Whatcom County)	Ecology Habitat Rating Score	Low-Intensity Land Use Buffer Width (feet) ¹	High-Intensity Land Use Buffer Width (feet) ²
Wetland A	IV	IV	4	-	50
Wetland B	III	III	5	-	150
Wetland C	III	III	4	50	-

Note:

1. Whatcom County, 2020. Whatcom County Code. Accessed Nov. 2, 2020. Available at: <https://www.codepublishing.com/WA/WhatcomCounty/>

3.6 Wetland Delineation and Typing Limitations

Wetland identification is an inexact science, and differences of professional opinion occasionally occurs between trained individuals. Final determinations for wetland boundaries and typing concurrence or adjustments to these are the responsibility of the regulating resource agency. Wetlands are, by definition, transitional areas; their boundaries can be altered by changes in

hydrology or land use. In addition, the definition of jurisdictional wetlands may change. If a physical change occurs in the basin, or if 3 years pass before the proposed project is undertaken, another wetland survey should be conducted. The results and conclusions expressed herein represent Anchor QEA's professional judgment based on the information available. No other warranty, expressed or implied, is made.

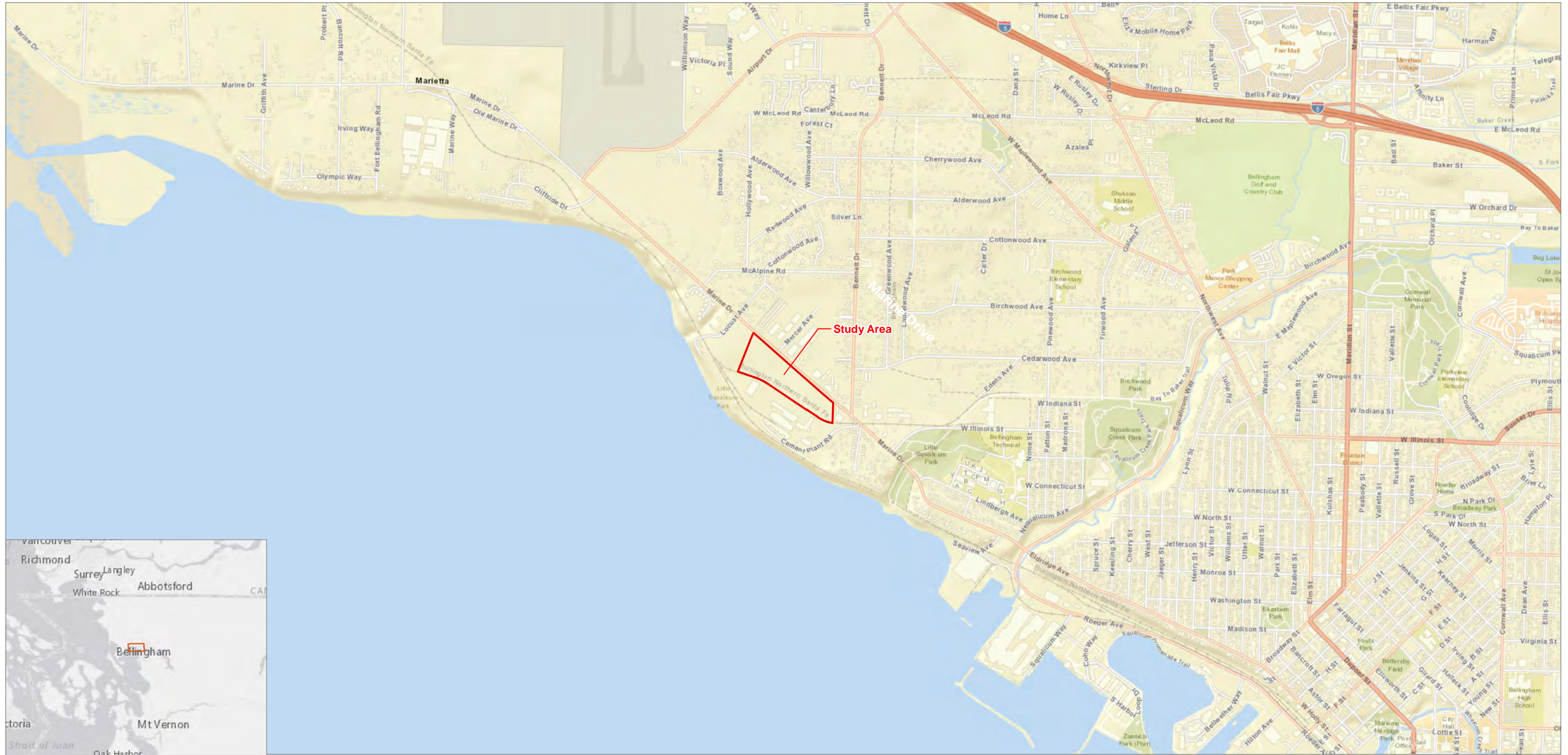
4 References

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Figures



LEGEND:
 Study Area



 0 4,000
 Feet

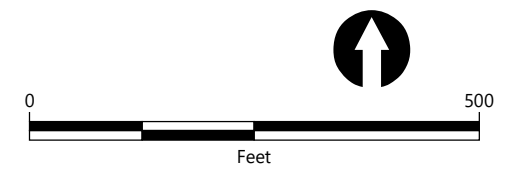
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Figure 1
Vicinity Map
 Wetland Delineation and Critical Areas Report
 Marine Drive Proposed Development Project



LEGEND:
Study Area





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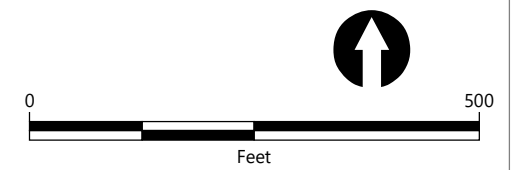


Figure 2
Aerial Overview Map
Wetland Delineation and Critical Areas Report
Marine Drive Proposed Development Project



LEGEND:

-  Study Area
-  Urban land - Whatcom-Labounty complex, 0 to 8 percent slopes

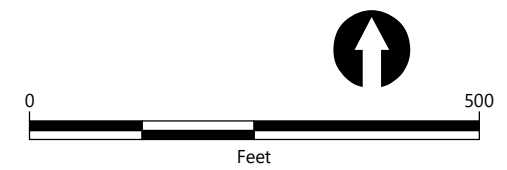


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LEGEND:

- Study Area
- Freshwater Forested/Shrub Wetland (PSSC)
- Riverine (R4SBC)
- Estuarine and Marine Wetland (E2AB/USN)
- Estuarine and Marine Wetland (E2USN)
- Estuarine and Marine Deepwater (E1UBL)



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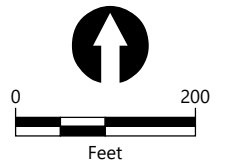


Figure 4
USFWS National Wetlands Inventory Map
 Wetland Delineation and Critical Areas Report
 Marine Drive Proposed Development Project



- LEGEND:**
- Study Area
 - Extent of Historically Developed Area
 - Delineated Wetland
 - 1-Foot Contour
 - Wetland Buffer
 - Data Plot

- NOTES:**
1. Contours are from topographic survey conducted by Wilson Engineering. May 2021.
 2. Horizontal datum is NAD83 Washington State Plane North Zone, U.S. Feet.
 3. Vertical datum is North American Vertical Datum of 1988, Feet.



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Figure 5
Wetland and Wetland Buffer Delineation Map
 Wetland Delineation and Critical Areas Report
 Marine Drive Proposed Development Project

Appendix A

Field Data Forms

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

Project/Site: Marine Drive Proposed Development Project City/County: Whatcom County Sampling Date: Oct, 26 2020
 Applicant/Owner: ABC Recycling State: WA Sampling Point: DP-01
 Investigator(s): Joseph R. Pursley (Anchor QEA, LLC) Section, Township, Range: S44, T38, R2E
 Landform (hillslope, terrace, etc.): Hillslope/Depression Mosaic Local relief (concave, convex, none): Concave Slope: 0-8%
 Subregion (LRR): Northwest Forests and Coast (LRR A) Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: Urban land – Whatcom - Labounty complex NWI Classification: PSSC
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No _____ (If no, explain in Remarks)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" Present? Yes No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <input checked="" type="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: For labeled Data Plot locations and site map please see Figure 5 in the "Wetland Delineation Report, Anchor QEA, Nov. 2020".

VEGETATION

<u>Tree Stratum</u> (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status?	Dominance Test worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</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>100%</u> (A/B)
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50%= <u>0</u> 20%= <u>0</u> Total Cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u> (Plot size: _____)				Prevalence Index Worksheet:
1. <u>Cornus sericea</u>	<u>60</u>	<u>Yes</u>	<u>FACW</u>	Total % Cover of:
2. <u>Crataegus monogyna</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	OBL species <u>0</u> x1 = <u>0</u>
3. <u>Ligustrum sinense</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>	FACW species <u>60</u> x2 = <u>120</u>
4. _____	_____	_____	_____	FAC species <u>45</u> x3 = <u>135</u>
5. _____	_____	_____	_____	FACU species <u>0</u> x4 = <u>0</u>
50%= <u>50</u> 20%= <u>20</u> Total Cover: <u>100</u>				UPL species <u>0</u> x5 = <u>0</u>
<u>Herb Stratum</u> (Plot size: _____)				Column Totals: <u>105</u> (A) <u>255</u> (B)
1. <u>Equisetum arvense</u>	<u>5</u>	<u>Yes</u>	<u>FAC</u>	Prevalence Index = B/A = <u>2.4</u>
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
50%= <u>2.5</u> 20%= <u>1</u> Total Cover: <u>5</u>				
<u>Woody Vine Stratum</u> (Plot size: _____)				Hydrophytic Vegetation Indicators:
1. _____	_____	_____	_____	_____ 1 - Rapid Test for Hydrophytic Vegetation
2. _____	_____	_____	_____	<input checked="" type="checkbox"/> 2 - Dominance Test is >50%
				<input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹
				_____ 4 - Morphological Adaptation ¹ (Provide supporting data in Remarks or on a separate sheet)
				_____ 5 - Wetland Non-Vascular Plants ¹
				_____ Problematic Hydrophytic Vegetation ¹ (Explain)
				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____

Remarks: The dogwood and privet scrub-shrub layer was so dense there was almost no herb layer. The privet has become vine-like and is climbing the dogwood.

SOIL

Sampling Point: DP-01

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		
0-10	10YR 3/1	100					SiL	
10-12	10YR 3/1	95	10YR 4/6	5	C	M	SiL	Bright redox concentrations, saturation
12-18	10YR 5/1	85	10YR 4/6	5	C	M	SiL	Redox in the depleted layer.
	10YR 6/3	10						

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils³:	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)	
<input checked="" type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	
<input type="checkbox"/> Sandy Muck Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)		
<input type="checkbox"/> Sandy gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)		

Restrictive Layer (if present): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
--	---

Remarks: Transition from dark soil above 12 inches to depleted layer below 12 inches was abrupt.

HYDROLOGY

Wetland Hydrology Indicators:	
Primary Indicators (minimum one required; check all that apply)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A and 4B)
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Drainage Patterns (B10)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	
<input checked="" type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	

Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>16</u> Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>10</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
---	---

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

Remarks: Evidence (water stained leaves) of ponded water in depression was observed. The dogwood roots seem elevated due to saturation or seasonal inundation.

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

Project/Site: Marine Drive Proposed Development Project City/County: Whatcom County Sampling Date: Oct, 26 2020
 Applicant/Owner: ABC Recycling State: WA Sampling Point: DP-02
 Investigator(s): Joseph R. Pursley (Anchor QEA, LLC) Section, Township, Range: S44, T38, R2E
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope: 0-8%
 Subregion (LRR): Northwest Forests and Coast (LRR A) Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: Urban land – Whatcom - Labounty complex NWI Classification: PSSC
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" Present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u>
Hydric Soil Present? Yes _____ No <u>X</u>	
Wetland Hydrology Present? Yes _____ No <u>X</u>	

Remarks: For labeled Data Plot locations and site map please see Figure 2 in the "Wetland Verification and Non-Compensatory Mitigation Plan".

VEGETATION

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status?	Dominance Test worksheet:
1. <u>Populus balsamifera</u>	15	Yes	FAC	Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A)
2. <u>Alnus rubra</u>	10	Yes	FAC	Total Number of Dominant Species Across All Strata: <u>4</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>75%</u> (A/B)
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50%= <u>12.5</u> 20%= <u>5</u> Total Cover: <u>25</u>				
Sapling/Shrub Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status?	Prevalence Index Worksheet:
1. <u>Rubus armeniacus</u>	15	No	FAC	Total % Cover of: _____ Multiply by: _____
2. <u>Rubus ursinus</u>	5	No	FACU	OBL species <u>0</u> x1 = <u>0</u>
3. <u>Ligustrum sinense</u>	15	No	FAC	FACW species <u>0</u> x2 = <u>0</u>
4. <u>Symphoricarpos albus</u>	15	No	FACU	FAC species <u>105</u> x3 = <u>315</u>
5. <u>Crataegus monogyna</u>	50	Yes	FAC	FACU species <u>40</u> x4 = <u>160</u>
50%= <u>50</u> 20%= <u>20</u> Total Cover: <u>100</u>				UPL species <u>0</u> x5 = <u>0</u>
Column Totals: <u>145</u> (A) <u>475</u> (B)				Prevalence Index = B/A = <u>3.3</u>
Herb Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status?	Hydrophytic Vegetation Indicators:
1. <u>Pteridium aquilinum</u>	20	Yes	FACU	1 - Rapid Test for Hydrophytic Vegetation
2. _____	_____	_____	_____	<u>X</u> 2 - Dominance Test is >50%
3. _____	_____	_____	_____	3 - Prevalence Index is ≤3.0 ¹
4. _____	_____	_____	_____	4 - Morphological Adaptation ¹ (Provide supporting data in Remarks or on a separate sheet)
5. _____	_____	_____	_____	5 - Wetland Non-Vascular Plants ¹
6. _____	_____	_____	_____	Problematic Hydrophytic Vegetation ¹ (Explain)
7. _____	_____	_____	_____	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
50%= <u>10</u> 20%= <u>4</u> Total Cover: <u>20</u>				
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status?	Hydrophytic Vegetation Present?
1. _____	_____	_____	_____	Yes <u>X</u> No _____
2. _____	_____	_____	_____	
Total Cover: <u>0</u>				
% Bare Ground in Herb Stratum <u>80</u> % Cover of Biotic Crust _____				

Remarks: The upland data plot was located on a steep hillside of folded soils and fill that did not have normal soil structure and drainage of a steep slope.

SOIL

Sampling Point: DP-02

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					SiL	wet at surface with gravel
6-18	10YR 4/2	50					SiL	Folded soil with sand and gravel
	10YR 3/2	50					SiL	gravel in soil

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

<p>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</p> <p><input type="checkbox"/> Histosol (A1)</p> <p><input type="checkbox"/> Histic Epipedon (A2)</p> <p><input type="checkbox"/> Black Histic (A3)</p> <p><input type="checkbox"/> Hydrogen Sulfide (A4)</p> <p><input type="checkbox"/> Depleted Below Dark Surface (A11)</p> <p><input type="checkbox"/> Thick Dark Surface (A12)</p> <p><input type="checkbox"/> Sandy Muck Mineral (S1)</p> <p><input type="checkbox"/> Sandy gleyed Matrix (S4)</p>	<p>Indicators for Problematic Hydric Soils³:</p> <p><input type="checkbox"/> Sandy Redox (S5)</p> <p><input type="checkbox"/> Stripped Matrix (S6)</p> <p><input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)</p> <p><input type="checkbox"/> Loamy Gleyed Matrix (F2)</p> <p><input type="checkbox"/> Depleted Matrix (F3)</p> <p><input type="checkbox"/> Redox Dark Surface (F6)</p> <p><input type="checkbox"/> Depleted Dark Surface (F7)</p> <p><input type="checkbox"/> Redox Depressions (F8)</p>	<p><input type="checkbox"/> 2 cm Muck (A10) (LRR B)</p> <p><input type="checkbox"/> Red Parent Material (TF2)</p> <p><input type="checkbox"/> Very Shallow Dark Surface (TF12)</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p> <p>³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.</p>
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<p>Restrictive Layer (if present):</p> <p>Type: _____</p> <p>Depth (inches): _____</p>	<p>Hydric Soil Present? Yes _____ No <u>X</u></p>
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Remarks: Soils seemed folded in layers with gravel and sand.

HYDROLOGY

<p>Wetland Hydrology Indicators:</p> <p>Primary Indicators (minimum one required; check all that apply)</p> <p><input type="checkbox"/> Surface Water (A1)</p> <p><input type="checkbox"/> High Water Table (A2)</p> <p><input type="checkbox"/> Saturation (A3)</p> <p><input type="checkbox"/> Water Marks (B1)</p> <p><input type="checkbox"/> Sediment Deposits (B2)</p> <p><input type="checkbox"/> Drift Deposits (B3)</p> <p><input type="checkbox"/> Algal Mat or Crust (B4)</p> <p><input type="checkbox"/> Iron Deposits (B5)</p> <p><input type="checkbox"/> Surface Soil Cracks (B6)</p> <p><input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)</p> <p><input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)</p>		<p>Secondary Indicators (2 or more required)</p> <p><input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A and 4B)</p> <p><input type="checkbox"/> Salt Crust (B11)</p> <p><input type="checkbox"/> Aquatic Invertebrates (B13)</p> <p><input type="checkbox"/> Hydrogen Sulfide Odor (C1)</p> <p><input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)</p> <p><input type="checkbox"/> Presence of Reduced Iron (C4)</p> <p><input type="checkbox"/> Recent Iron Reduction in Plowed Soils (C6)</p> <p><input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p>	<p><input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A and 4B)</p> <p><input type="checkbox"/> Drainage Patterns (B10)</p> <p><input type="checkbox"/> Dry-Season Water Table (C2)</p> <p><input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)</p> <p><input type="checkbox"/> Geomorphic Position (D2)</p> <p><input type="checkbox"/> Shallow Aquitard (D3)</p> <p><input type="checkbox"/> FAC-Neutral Test (D5)</p> <p><input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)</p> <p><input type="checkbox"/> Frost-Heave Hummocks (D7)</p>
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<p>Field Observations:</p> <p>Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____</p> <p>Water table Present? Yes _____ No <u>X</u> Depth (inches): _____</p> <p>Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)</p>	<p>Wetland Hydrology Present? Yes _____ No <u>X</u></p>
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Describe Recorded Data (Unnamed Tributary gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: The soil surface was saturated due to recent rain events. No hydrology observed below 2 inches.

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

Project/Site: Marine Drive Proposed Development Project City/County: Whatcom County Sampling Date: Oct, 26 2020
 Applicant/Owner: ABC Recycling State: WA Sampling Point: DP-03
 Investigator(s): Joseph R. Pursley (Anchor QEA, LLC) Section, Township, Range: S44, T38, R2E
 Landform (hillslope, terrace, etc.): Road side depression/ditch Local relief (concave, convex, none): Concave Slope: 0-8%
 Subregion (LRR): Northwest Forests and Coast (LRR A) Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: Urban land – Whatcom - Labounty complex NWI Classification: PSSC
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" Present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____
Hydric Soil Present? Yes <u>X</u> No _____	
Wetland Hydrology Present? Yes <u>X</u> No _____	

Remarks: For labeled Data Plot locations and site map please see Figure 5 in the "Wetland Delineation Report, Anchor QEA, Nov. 2020".

VEGETATION

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status?	Dominance Test worksheet:	
1. <u>Pinus resinosa</u>	5	Yes	NI	Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A)	
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>4</u> (B)	
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)	
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
50%= <u>2.5</u> 20%= <u>1</u> Total Cover: <u>5</u>					
Sapling/Shrub Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status?	Prevalence Index Worksheet:	
1. <u>Cornus sericea</u>	50	Yes	FACW	Total % Cover of: _____ Multiply by: _____	
2. <u>Crataegus monogyna</u>	20	Yes	FAC	OBL species <u>0</u> x1 = <u>0</u>	
3. <u>Ligustrum sinense</u>	15	No	FAC	FACW species <u>50</u> x2 = <u>100</u>	
4. <u>Rubus armeniacus</u>	15	No	FAC	FAC species <u>90</u> x3 = <u>270</u>	
5. _____	_____	_____	_____	FACU species <u>0</u> x4 = <u>0</u>	
50%= <u>50</u> 20%= <u>20</u> Total Cover: <u>100</u>				UPL species <u>0</u> x5 = <u>0</u>	
Column Totals: <u>140</u> (A) <u>370</u> (B)				Prevalence Index = B/A = <u>2.6</u>	
Herb Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status?	Hydrophytic Vegetation Indicators:	
1. <u>Equisetum arvense</u>	15	Yes	FAC	_____ 1 - Rapid Test for Hydrophytic Vegetation	
2. <u>Agrostis stolonifera</u>	25	Yes	FAC	<u>X</u> 2 - Dominance Test is >50%	
3. _____	_____	_____	_____	<u>X</u> 3 - Prevalence Index is ≤3.0 ¹	
4. _____	_____	_____	_____	_____ 4 - Morphological Adaptation ¹ (Provide supporting data in Remarks or on a separate sheet)	
5. _____	_____	_____	_____	_____ 5 - Wetland Non-Vascular Plants ¹	
6. _____	_____	_____	_____	_____ Problematic Hydrophytic Vegetation ¹ (Explain)	
7. _____	_____	_____	_____	_____ ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
8. _____	_____	_____	_____		
9. _____	_____	_____	_____		
50%= <u>20</u> 20%= <u>8</u> Total Cover: <u>40</u>					
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status?	Hydrophytic Vegetation Present?	
1. _____	_____	_____	_____	Yes <u>X</u> No _____	
2. _____	_____	_____	_____		
Total Cover: <u>0</u>					
% Bare Ground in Herb Stratum <u>60</u> % Cover of Biotic Crust _____					

Remarks: The scrub-shrub layer was so dense that there was limited herb layer.

SOIL

Sampling Point: DP-03

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	10YR 3/1	100	10YR 4/6	5	C	M	SiL	OR's in upper 6 inches. Sand and gravel.
12-16	10YR 4/1	90	10YR 4/6	10	C	M	SiL	Redox concentrations, saturation
16-18	10YR 5/1	80	10YR 4/6	20	C	M	SiL	Redox in the depleted layer.

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input checked="" type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Muck Mineral (S1) <input type="checkbox"/> Sandy gleyed Matrix (S4)		Indicators for Problematic Hydric Soils³: <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8)		<input type="checkbox"/> 2 cm Muck (A10) (LRR B) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)	
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³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____
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Remarks: Oxidized roots in upper 6 inches with sand and gravel from adjacent fill in soil.

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum 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"/> Drainage Patterns (B10)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Geomorphic Position (D2)	<input type="checkbox"/> Shallow Aquitard (D3)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)	<input type="checkbox"/> Frost-Heave Hummocks (D7)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Recent Iron Reduction in Plowed Soils (C6)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)			
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Other (Explain in Remarks)				
<input type="checkbox"/> Drift Deposits (B3)					
<input type="checkbox"/> Algal Mat or Crust (B4)					
<input type="checkbox"/> Iron Deposits (B5)					
<input type="checkbox"/> Surface Soil Cracks (B6)					
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)					
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)					

Field Observations: Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Water table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>16</u> Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>12</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____
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Describe Recorded Data (Unnamed Tributary gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Saturated soils at 1 inche with slowly filling water table to 16 inches in pit.

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

Project/Site: Marine Drive Proposed Development Project City/County: Whatcom County Sampling Date: Oct, 26 2020
 Applicant/Owner: ABC Recycling State: WA Sampling Point: DP-04
 Investigator(s): Joseph R. Pursley (Anchor QEA, LLC) Section, Township, Range: S44, T38, R2E
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): Convex Slope: 0-8%
 Subregion (LRR): Northwest Forests and Coast (LRR A) Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: Urban land – Whatcom - Labouny complex NWI Classification: PSSC
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" Present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland?	Yes _____ No <u>X</u>
Hydric Soil Present? Yes _____ No <u>X</u>		
Wetland Hydrology Present? Yes _____ No <u>X</u>		

Remarks: For labeled Data Plot locations and site map please see Figure 2 in the "Wetland Verification and Non-Compensatory Mitigation Plan."

VEGETATION

<p><u>Tree Stratum</u> (Plot size: _____)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>Absolute % Cover</th> <th>Dominant Species?</th> <th>Indicator Status?</th> </tr> </thead> <tbody> <tr><td>1. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>2. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>3. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>4. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>5. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr> <td>50%= <u>0</u> 20%= <u>0</u> Total Cover: <u>0</u></td> <td></td><td></td><td></td> </tr> </tbody> </table> <p><u>Sapling/Shrub Stratum</u> (Plot size: _____)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tbody> <tr><td>1. <u>Rubus armeniacus</u></td><td>45</td><td>Yes</td><td>FAC</td></tr> <tr><td>2. <u>Rubus ursinus</u></td><td>10</td><td>No</td><td>FACU</td></tr> <tr><td>3. <u>Crataegus monogyna</u></td><td>20</td><td>Yes</td><td>FAC</td></tr> <tr><td>4. <u>Symphoricarpos albus</u></td><td>25</td><td>Yes</td><td>FACU</td></tr> <tr><td>5. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr> <td>50%= <u>50</u> 20%= <u>20</u> Total Cover: <u>100</u></td> <td></td><td></td><td></td> </tr> </tbody> </table> <p><u>Herb Stratum</u> (Plot size: _____) CHECK RANKED VALUES</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tbody> <tr><td>1. <u>Pteridium aquilinum</u></td><td>20</td><td>Yes</td><td>FACU</td></tr> <tr><td>2. <u>Hypericum perforatum</u></td><td>20</td><td>Yes</td><td>FACU</td></tr> <tr><td>3. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>4. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>5. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>6. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>7. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>8. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>9. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr> <td>50%= <u>20</u> 20%= <u>8</u> Total Cover: <u>40</u></td> <td></td><td></td><td></td> </tr> </tbody> </table> <p><u>Woody Vine Stratum</u> (Plot size: _____)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tbody> <tr><td>1. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>2. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr> <td>Total Cover: <u>0</u></td> <td></td><td></td><td></td> </tr> </tbody> </table> <p>% Bare Ground in Herb Stratum <u>60</u> % Cover of Biotic Crust _____</p>		Absolute % Cover	Dominant Species?	Indicator Status?	1. _____	_____	_____	_____	2. _____	_____	_____	_____	3. _____	_____	_____	_____	4. _____	_____	_____	_____	5. _____	_____	_____	_____	50%= <u>0</u> 20%= <u>0</u> Total Cover: <u>0</u>				1. <u>Rubus armeniacus</u>	45	Yes	FAC	2. <u>Rubus ursinus</u>	10	No	FACU	3. <u>Crataegus monogyna</u>	20	Yes	FAC	4. <u>Symphoricarpos albus</u>	25	Yes	FACU	5. _____	_____	_____	_____	50%= <u>50</u> 20%= <u>20</u> Total Cover: <u>100</u>				1. <u>Pteridium aquilinum</u>	20	Yes	FACU	2. <u>Hypericum perforatum</u>	20	Yes	FACU	3. _____	_____	_____	_____	4. _____	_____	_____	_____	5. _____	_____	_____	_____	6. _____	_____	_____	_____	7. _____	_____	_____	_____	8. _____	_____	_____	_____	9. _____	_____	_____	_____	50%= <u>20</u> 20%= <u>8</u> Total Cover: <u>40</u>				1. _____	_____	_____	_____	2. _____	_____	_____	_____	Total Cover: <u>0</u>				<p>Dominance Test worksheet:</p> <p>Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)</p> <p>Total Number of Dominant Species Across All Strata: <u>5</u> (B)</p> <p>Percent of Dominant Species That Are OBL, FACW, or FAC: <u>40%</u> (A/B)</p> <p>Prevalence Index Worksheet:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Total % Cover of:</th> <th>Multiply by:</th> </tr> </thead> <tbody> <tr> <td>OBL species <u>0</u> x1 = <u>0</u></td> <td></td> </tr> <tr> <td>FACW species <u>0</u> x2 = <u>0</u></td> <td></td> </tr> <tr> <td>FAC species <u>65</u> x3 = <u>195</u></td> <td></td> </tr> <tr> <td>FACU species <u>75</u> x4 = <u>300</u></td> <td></td> </tr> <tr> <td>UPL species <u>0</u> x5 = <u>0</u></td> <td></td> </tr> <tr> <td>Column Totals: <u>140</u> (A)</td> <td><u>495</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u>3.5</u></td> </tr> </tbody> </table> <p>Hydrophytic Vegetation Indicators:</p> <p>_____ 1 - Rapid Test for Hydrophytic Vegetation</p> <p>_____ 2 - Dominance Test is >50%</p> <p>_____ 3 - Prevalence Index is ≤3.0¹</p> <p>_____ 4 - Morphological Adaptation¹ (Provide supporting data in Remarks or on a separate sheet)</p> <p>_____ 5 - Wetland Non-Vascular Plants¹</p> <p>_____ Problematic Hydrophytic Vegetation¹ (Explain)</p> <p>¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</p> <p>Hydrophytic Vegetation Present? Yes _____ No <u>X</u></p>	Total % Cover of:	Multiply by:	OBL species <u>0</u> x1 = <u>0</u>		FACW species <u>0</u> x2 = <u>0</u>		FAC species <u>65</u> x3 = <u>195</u>		FACU species <u>75</u> x4 = <u>300</u>		UPL species <u>0</u> x5 = <u>0</u>		Column Totals: <u>140</u> (A)	<u>495</u> (B)	Prevalence Index = B/A = <u>3.5</u>	
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9. _____	_____	_____	_____																																																																																																																						
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1. _____	_____	_____	_____																																																																																																																						
2. _____	_____	_____	_____																																																																																																																						
Total Cover: <u>0</u>																																																																																																																									
Total % Cover of:	Multiply by:																																																																																																																								
OBL species <u>0</u> x1 = <u>0</u>																																																																																																																									
FACW species <u>0</u> x2 = <u>0</u>																																																																																																																									
FAC species <u>65</u> x3 = <u>195</u>																																																																																																																									
FACU species <u>75</u> x4 = <u>300</u>																																																																																																																									
UPL species <u>0</u> x5 = <u>0</u>																																																																																																																									
Column Totals: <u>140</u> (A)	<u>495</u> (B)																																																																																																																								
Prevalence Index = B/A = <u>3.5</u>																																																																																																																									

Remarks: The upland vegetation shows signs of frequent disturbance by adjacent land use activities.

SOIL

Sampling Point: DP-04

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		
0-14	10YR 4/3	100					SiL	50% rock and coarse sand
14-18	10YR 4/2	30					SiL	Less rock in soil
	10YR 4/3	70					SiL	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Muck Mineral (S1) <input type="checkbox"/> Sandy gleyed Matrix (S4)		Indicators for Problematic Hydric Soils³: <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8)		<input type="checkbox"/> 2 cm Muck (A10) (LRR B) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)	
---	--	---	--	---	--

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

Restrictive Layer (if present): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes _____ No <u>X</u>
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Remarks: Upper soil layer has 50% angular rock and coarse sand.

HYDROLOGY

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

Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <u>X</u>
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Describe Recorded Data (Unnamed Tributary gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: The soil surface was moist due to recent rain events.

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

Project/Site: Marine Drive Proposed Development Project City/County: Whatcom County Sampling Date: Oct, 26 2020
 Applicant/Owner: ABC Recycling State: WA Sampling Point: DP-05
 Investigator(s): Joseph R. Pursley (Anchor QEA, LLC) Section, Township, Range: S44, T38, R2E
 Landform (hillslope, terrace, etc.): Narrow depression Local relief (concave, convex, none): Concave Slope: 0-8%
 Subregion (LRR): Northwest Forests and Coast (LRR A) Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: Urban land – Whatcom - Labounty complex NWI Classification: PSSC
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" Present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____
Hydric Soil Present? Yes <u>X</u> No _____	
Wetland Hydrology Present? Yes <u>X</u> No _____	

Remarks: For labeled Data Plot locations and site map please see Figure 5 in the "Wetland Delineation Report, Anchor QEA, Nov. 2020."

VEGETATION

<u>Tree Stratum</u> (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status?	Dominance Test worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>6</u> (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>6</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50%= <u>0</u> 20%= <u>0</u> Total Cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u> (Plot size: _____)				Prevalence Index Worksheet:
1. <u>Cornus sericea</u>	20	Yes	FACW	Total % Cover of: _____ Multiply by: _____
2. <u>Crataegus monogyna</u>	20	Yes	FAC	OBL species <u>0</u> x1 = <u>0</u>
3. <u>Rubus armeniacus</u>	40	Yes	FAC	FACW species <u>45</u> x2 = <u>90</u>
4. <u>Salix scouleriana</u>	20	Yes	FAC	FAC species <u>95</u> x3 = <u>285</u>
5. _____	_____	_____	_____	FACU species <u>0</u> x4 = <u>0</u>
50%= <u>50</u> 20%= <u>20</u> Total Cover: <u>100</u>				UPL species <u>0</u> x5 = <u>0</u>
<u>Herb Stratum</u> (Plot size: _____)	CHECK RANKED VALUES			Column Totals: <u>140</u> (A) <u>375</u> (B)
1. <u>Equisetum arvense</u>	15	Yes	FAC	Prevalence Index = B/A = <u>2.7</u>
2. <u>Phalaris arundinacea</u>	25	Yes	FACW	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
50%= <u>20</u> 20%= <u>8</u> Total Cover: <u>40</u>				
<u>Woody Vine Stratum</u> (Plot size: _____)				Hydrophytic Vegetation Indicators:
1. _____	_____	_____	_____	_____ 1 - Rapid Test for Hydrophytic Vegetation
2. _____	_____	_____	_____	<u>X</u> 2 - Dominance Test is >50%
				<u>X</u> 3 - Prevalence Index is ≤3.0 ¹
				_____ 4 - Morphological Adaptation ¹ (Provide supporting data in Remarks or on a separate sheet)
				_____ 5 - Wetland Non-Vascular Plants ¹
				_____ Problematic Hydrophytic Vegetation ¹ (Explain)
				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
				Hydrophytic Vegetation Present? Yes <u>X</u> No _____

Remarks: Recent hydrology increase appears to have killed Red alder (*Alnus rubra*) in the dat plot area.

SOIL

Sampling Point: DP-05

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		
0-10	10YR 3/1						SiL	Some angular gravel in soil.
10-14	10YR 3/1	95	10YR 4/6	5	C	M	SiL	Redox concentrations and saturation
14-18	10YR 5/1	85	10YR 4/6	15	C	M	SCL	Redox bright in depleted layer

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils³:	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)	
<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 checked="" type="checkbox"/> Redox Dark Surface (F6)		³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input type="checkbox"/> Sandy Muck Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)		
<input type="checkbox"/> Sandy gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)		

Restrictive Layer (if present): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Remarks: Small rocks below 16 inches. Top 2 inches had coarse Phalaris roots.

HYDROLOGY

Wetland Hydrology Indicators:		
Primary Indicators (minimum 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 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 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 Plowed Soils (C6)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		

Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>14</u> Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>10</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Describe Recorded Data (Unnamed Tributary gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: Narrow swale between sidewalk and adjacent industrial fill area.

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

Project/Site: Marine Drive Proposed Development Project City/County: Whatcom County Sampling Date: Oct, 26 2020
 Applicant/Owner: ABC Recycling State: WA Sampling Point: DP-06
 Investigator(s): Joseph R. Pursley (Anchor QEA, LLC) Section, Township, Range: S44, T38, R2E
 Landform (hillslope, terrace, etc.): Hillslope/terrace Local relief (concave, convex, none): Convex Slope: 0-8%
 Subregion (LRR): Northwest Forests and Coast (LRR A) Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: Urban land – Whatcom - Labouny complex NWI Classification: PSSC
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" Present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u>
Hydric Soil Present? Yes _____ No <u>X</u>	
Wetland Hydrology Present? Yes _____ No <u>X</u>	

Remarks: For labeled Data Plot locations and site map please see Figure 2 in the "Wetland Verification and Non-Compensatory Mitigation Plan".

VEGETATION

<p><u>Tree Stratum</u> (Plot size: _____)</p> <p>1. _____ Absolute % Cover _____ Dominant Species? _____ Indicator Status? _____</p> <p>2. _____</p> <p>3. _____</p> <p>4. _____</p> <p>5. _____</p> <p>50%= <u>0</u> 20%= <u>0</u> Total Cover: <u>0</u></p> <p><u>Sapling/Shrub Stratum</u> (Plot size: _____)</p> <p>1. <u>Rubus armeniacus</u> 45 Yes FAC</p> <p>2. <u>Rosa nutkana</u> 15 No FAC</p> <p>3. <u>Crataegus monogyna</u> 20 Yes FAC</p> <p>4. <u>Symphoricarpos albus</u> 15 No FACU</p> <p>5. _____</p> <p>50%= <u>47.5</u> 20%= <u>19</u> Total Cover: <u>95</u></p> <p><u>Herb Stratum</u> (Plot size: _____) CHECK RANKED VALUES</p> <p>1. <u>Pteridium aquilinum</u> 5 No FACU</p> <p>2. <u>Hypericum perforatum</u> 15 Yes FACU</p> <p>3. <u>Festuca rubra</u> 30 Yes FAC</p> <p>4. <u>Jacobaea vulgaris</u> 15 Yes FACU</p> <p>5. _____</p> <p>6. _____</p> <p>7. _____</p> <p>8. _____</p> <p>9. _____</p> <p>50%= <u>32.5</u> 20%= <u>13</u> Total Cover: <u>65</u></p> <p><u>Woody Vine Stratum</u> (Plot size: _____) CHECK RANKED VALUES</p> <p>1. _____</p> <p>2. _____</p> <p>Total Cover: <u>0</u></p> <p>% Bare Ground in Herb Stratum <u>35</u> % Cover of Biotic Crust _____</p>	<p>Dominance Test worksheet:</p> <p>Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A)</p> <p>Total Number of Dominant Species Across All Strata: <u>5</u> (B)</p> <p>Percent of Dominant Species That Are OBL, FACW, or FAC: <u>60%</u> (A/B)</p> <p>Prevalence Index Worksheet:</p> <table border="0"> <tr> <td>Total % Cover of:</td> <td>Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u> x1 = <u>0</u></td> <td></td> </tr> <tr> <td>FACW species <u>0</u> x2 = <u>0</u></td> <td></td> </tr> <tr> <td>FAC species <u>110</u> x3 = <u>330</u></td> <td></td> </tr> <tr> <td>FACU species <u>50</u> x4 = <u>200</u></td> <td></td> </tr> <tr> <td>UPL species <u>0</u> x5 = <u>0</u></td> <td></td> </tr> <tr> <td>Column Totals: <u>160</u> (A)</td> <td><u>530</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u>3.3</u></td> </tr> </table> <p>Hydrophytic Vegetation Indicators:</p> <p>_____ 1 - Rapid Test for Hydrophytic Vegetation</p> <p><u>X</u> 2 - Dominance Test is >50%</p> <p>_____ 3 - Prevalence Index is ≤3.0¹</p> <p>_____ 4 - Morphological Adaptation¹ (Provide supporting data in Remarks or on a separate sheet)</p> <p>_____ 5 - Wetland Non-Vascular Plants¹</p> <p>_____ Problematic Hydrophytic Vegetation¹ (Explain)</p> <p>¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</p> <p>Hydrophytic Vegetation Present? Yes <u>X</u> No _____</p>	Total % Cover of:	Multiply by:	OBL species <u>0</u> x1 = <u>0</u>		FACW species <u>0</u> x2 = <u>0</u>		FAC species <u>110</u> x3 = <u>330</u>		FACU species <u>50</u> x4 = <u>200</u>		UPL species <u>0</u> x5 = <u>0</u>		Column Totals: <u>160</u> (A)	<u>530</u> (B)	Prevalence Index = B/A = <u>3.3</u>	
Total % Cover of:	Multiply by:																
OBL species <u>0</u> x1 = <u>0</u>																	
FACW species <u>0</u> x2 = <u>0</u>																	
FAC species <u>110</u> x3 = <u>330</u>																	
FACU species <u>50</u> x4 = <u>200</u>																	
UPL species <u>0</u> x5 = <u>0</u>																	
Column Totals: <u>160</u> (A)	<u>530</u> (B)																
Prevalence Index = B/A = <u>3.3</u>																	

Remarks: The upland vegetation shows signs of frequent disturbance by adjacent land use activities.

SOIL

Sampling Point: DP-06

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-18	10YR 4/3	70					SiL	50% rock and coarse sand
	10YR 4/2	30						No sand or rock

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Muck Mineral (S1) <input type="checkbox"/> Sandy gleyed Matrix (S4)		Indicators for Problematic Hydric Soils³: <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8)		<input type="checkbox"/> 2 cm Muck (A10) (LRR B) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)	
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³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes _____ No <u>X</u>
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Remarks: Soils seemed foled with layers of sand and rock.

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum 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"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A and 4B)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	<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"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Geomorphic Position (D2)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Plowed Soils (C6)	<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> FAC-Neutral Test (D5)	<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"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Frost-Heave Hummocks (D7)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)					

Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <u>X</u>
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Describe Recorded Data (Unnamed Tributary gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: The soil surface was moist due to recent rain events

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

Project/Site: Marine Drive Proposed Development Project City/County: Whatcom County Sampling Date: Oct, 26 2020
 Applicant/Owner: ABC Recycling State: WA Sampling Point: DP-07
 Investigator(s): Joseph R. Pursley (Anchor QEA, LLC) Section, Township, Range: S44, T38, R2E
 Landform (hillslope, terrace, etc.): Narrow depression Local relief (concave, convex, none): Concave Slope: 0-8%
 Subregion (LRR): Northwest Forests and Coast (LRR A) Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: Urban land – Whatcom - Labounty complex NWI Classification: PSSC
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" Present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____
Hydric Soil Present? Yes <u>X</u> No _____	
Wetland Hydrology Present? Yes <u>X</u> No _____	

Remarks: For labeled Data Plot locations and site map please see Figure 5 in the "Wetland Delineation Report, Anchor QEA, Nov. 2020".

VEGETATION

<p><u>Tree Stratum</u> (Plot size: _____)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>Absolute % Cover</th> <th>Dominant Species?</th> <th>Indicator Status?</th> </tr> </thead> <tbody> <tr><td>1. <u>Salix scouleriana</u></td><td align="center">30</td><td align="center">Yes</td><td align="center">FAC</td></tr> <tr><td>2. <u>Betula papyrifera</u></td><td align="center">25</td><td align="center">Yes</td><td align="center">FAC</td></tr> <tr><td>3. _____</td><td></td><td></td><td></td></tr> <tr><td>4. _____</td><td></td><td></td><td></td></tr> <tr><td>5. _____</td><td></td><td></td><td></td></tr> <tr><td colspan="4">50%= <u>27.5</u> 20%= <u>11</u> Total Cover: <u>55</u></td></tr> </tbody> </table> <p><u>Sapling/Shrub Stratum</u> (Plot size: _____)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>Absolute % Cover</th> <th>Dominant Species?</th> <th>Indicator Status?</th> </tr> </thead> <tbody> <tr><td>1. <u>Cornus sericea</u></td><td align="center">40</td><td align="center">Yes</td><td align="center">FACW</td></tr> <tr><td>2. <u>Crataegus monogyna</u></td><td align="center">10</td><td align="center">No</td><td align="center">FAC</td></tr> <tr><td>3. <u>Rubus armeniacus</u></td><td align="center">5</td><td align="center">No</td><td align="center">FAC</td></tr> <tr><td>4. <u>Lonicera involucrata</u></td><td align="center">15</td><td align="center">No</td><td align="center">FAC</td></tr> <tr><td>5. <u>Salix scouleriana</u></td><td align="center">15</td><td align="center">No</td><td align="center">FAC</td></tr> <tr><td colspan="4">50%= <u>42.5</u> 20%= <u>17</u> Total Cover: <u>85</u></td></tr> </tbody> </table> <p><u>Herb Stratum</u> (Plot size: _____) CHECK RANKED VALUES</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>Absolute % Cover</th> <th>Dominant Species?</th> <th>Indicator Status?</th> </tr> </thead> <tbody> <tr><td>1. _____</td><td></td><td></td><td></td></tr> <tr><td>2. _____</td><td></td><td></td><td></td></tr> <tr><td>3. _____</td><td></td><td></td><td></td></tr> <tr><td>4. _____</td><td></td><td></td><td></td></tr> <tr><td>5. _____</td><td></td><td></td><td></td></tr> <tr><td>6. _____</td><td></td><td></td><td></td></tr> <tr><td>7. _____</td><td></td><td></td><td></td></tr> <tr><td>8. _____</td><td></td><td></td><td></td></tr> <tr><td>9. _____</td><td></td><td></td><td></td></tr> <tr><td colspan="4">50%= <u>0</u> 20%= <u>0</u> Total Cover: <u>0</u></td></tr> </tbody> </table> <p><u>Woody Vine Stratum</u> (Plot size: _____)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>Absolute % Cover</th> <th>Dominant Species?</th> <th>Indicator Status?</th> </tr> </thead> <tbody> <tr><td>1. _____</td><td></td><td></td><td></td></tr> <tr><td>2. _____</td><td></td><td></td><td></td></tr> <tr><td colspan="4">Total Cover: <u>0</u></td></tr> </tbody> </table> <p>% Bare Ground in Herb Stratum <u>100</u> % Cover of Biotic Crust _____</p>		Absolute % Cover	Dominant Species?	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Remarks: Dense shrubs prevent the herb layer from developing.

SOIL

Sampling Point: DP-07

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	10YR 3/1	90	10YR 4/6	10	C	M	SiL	Some angular gravel in soil.
12-18	10YR 5/1	85	10YR 4/6	15	C	M	SCL	Redox in depleted soil, saturation

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Muck Mineral (S1) <input type="checkbox"/> Sandy gleyed Matrix (S4)		Indicators for Problematic Hydric Soils³: <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input checked="" type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8)		<input type="checkbox"/> 2 cm Muck (A10) (LRR B) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)	
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³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____
--	--

Remarks: Depleted soils at 12 inches with water at 16 inches.

HYDROLOGY

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

Field Observations: Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Water table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>16</u> Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>12</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____
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Describe Recorded Data (Unnamed Tributary gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Depleted layer was dense and took several hours to fill with water to 16 inches BGS. Hydrology was flowing in at 12 inches.

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

Project/Site: Marine Drive Proposed Development Project City/County: Whatcom County Sampling Date: Oct, 26 2020
 Applicant/Owner: ABC Recycling State: WA Sampling Point: DP-08
 Investigator(s): Joseph R. Pursley (Anchor QEA, LLC) Section, Township, Range: S44, T38, R2E
 Landform (hillslope, terrace, etc.): Hillslope/terrace Local relief (concave, convex, none): Convex Slope: 0-8%
 Subregion (LRR): Northwest Forests and Coast (LRR A) Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: Urban land – Whatcom - Labouny complex NWI Classification: PSSC
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" Present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u>
Hydric Soil Present? Yes _____ No <u>X</u>	
Wetland Hydrology Present? Yes _____ No <u>X</u>	

Remarks: For labeled Data Plot locations and site map please see Figure 2 in the "Wetland Verification and Non-Compensatory Mitigation Plan".

VEGETATION

<p><u>Tree Stratum</u> (Plot size: _____)</p> <p>1. _____ Absolute % Cover _____ Dominant Species? _____ Indicator Status? _____</p> <p>2. _____</p> <p>3. _____</p> <p>4. _____</p> <p>5. _____</p> <p>50%= <u>0</u> 20%= <u>0</u> Total Cover: <u>0</u></p> <p><u>Sapling/Shrub Stratum</u> (Plot size: _____)</p> <p>1. <u>Rubus armeniacus</u> 25 Yes FAC</p> <p>2. <u>Rosa nutkana</u> 25 Yes FAC</p> <p>3. <u>Rubus ursinus</u> 10 No FAC</p> <p>4. <u>Symphoricarpos albus</u> 10 No FACU</p> <p>5. _____</p> <p>50%= <u>35</u> 20%= <u>14</u> Total Cover: <u>70</u></p> <p><u>Herb Stratum</u> (Plot size: _____) CHECK RANKED VALUES</p> <p>1. <u>Jacobaea vulgaris</u> 15 Yes FACU</p> <p>2. <u>Hypericum perforatum</u> 15 Yes FACU</p> <p>3. _____</p> <p>4. _____</p> <p>5. _____</p> <p>6. _____</p> <p>7. _____</p> <p>8. _____</p> <p>9. _____</p> <p>50%= <u>15</u> 20%= <u>6</u> Total Cover: <u>30</u></p> <p><u>Woody Vine Stratum</u> (Plot size: _____)</p> <p>1. _____</p> <p>2. _____</p> <p>Total Cover: <u>0</u></p> <p>% Bare Ground in Herb Stratum <u>70</u> % Cover of Biotic Crust _____</p>	<p>Dominance Test worksheet:</p> <p>Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)</p> <p>Total Number of Dominant Species Across All Strata: <u>4</u> (B)</p> <p>Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50%</u> (A/B)</p> <p>Prevalence Index Worksheet:</p> <table border="0"> <tr> <td>Total % Cover of:</td> <td>Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u> x1 = <u>0</u></td> <td></td> </tr> <tr> <td>FACW species <u>0</u> x2 = <u>0</u></td> <td></td> </tr> <tr> <td>FAC species <u>60</u> x3 = <u>180</u></td> <td></td> </tr> <tr> <td>FACU species <u>40</u> x4 = <u>160</u></td> <td></td> </tr> <tr> <td>UPL species <u>0</u> x5 = <u>0</u></td> <td></td> </tr> <tr> <td>Column Totals: <u>100</u> (A)</td> <td><u>340</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u>3.4</u></td> </tr> </table> <p>Hydrophytic Vegetation Indicators:</p> <p>_____ 1 - Rapid Test for Hydrophytic Vegetation</p> <p>_____ 2 - Dominance Test is >50%</p> <p>_____ 3 - Prevalence Index is ≤3.0¹</p> <p>_____ 4 - Morphological Adaptation¹ (Provide supporting data in Remarks or on a separate sheet)</p> <p>_____ 5 - Wetland Non-Vascular Plants¹</p> <p>_____ Problematic Hydrophytic Vegetation¹ (Explain)</p> <p>¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</p> <p>Hydrophytic Vegetation Present? Yes _____ No <u>X</u></p>	Total % Cover of:	Multiply by:	OBL species <u>0</u> x1 = <u>0</u>		FACW species <u>0</u> x2 = <u>0</u>		FAC species <u>60</u> x3 = <u>180</u>		FACU species <u>40</u> x4 = <u>160</u>		UPL species <u>0</u> x5 = <u>0</u>		Column Totals: <u>100</u> (A)	<u>340</u> (B)	Prevalence Index = B/A = <u>3.4</u>	
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Remarks: The upland vegetation shows signs of frequent disturbance and is within 15 feet of stored and staged shipping containers.

SOIL

Sampling Point: DP-08

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-18	10YR 6/3	100					LS	Rock, and debris in soil

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

<p>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</p> <p><input type="checkbox"/> Histosol (A1)</p> <p><input type="checkbox"/> Histic Epipedon (A2)</p> <p><input type="checkbox"/> Black Histic (A3)</p> <p><input type="checkbox"/> Hydrogen Sulfide (A4)</p> <p><input type="checkbox"/> Depleted Below Dark Surface (A11)</p> <p><input type="checkbox"/> Thick Dark Surface (A12)</p> <p><input type="checkbox"/> Sandy Muck Mineral (S1)</p> <p><input type="checkbox"/> Sandy gleyed Matrix (S4)</p>	<p>Indicators for Problematic Hydric Soils³:</p> <p><input type="checkbox"/> Sandy Redox (S5)</p> <p><input type="checkbox"/> Stripped Matrix (S6)</p> <p><input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)</p> <p><input type="checkbox"/> Loamy Gleyed Matrix (F2)</p> <p><input type="checkbox"/> Depleted Matrix (F3)</p> <p><input type="checkbox"/> Redox Dark Surface (F6)</p> <p><input type="checkbox"/> Depleted Dark Surface (F7)</p> <p><input type="checkbox"/> Redox Depressions (F8)</p>	<p><input type="checkbox"/> 2 cm Muck (A10) (LRR B)</p> <p><input type="checkbox"/> Red Parent Material (TF2)</p> <p><input type="checkbox"/> Very Shallow Dark Surface (TF12)</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p> <p>³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.</p>
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<p>Restrictive Layer (if present):</p> <p>Type: _____</p> <p>Depth (inches): _____</p>	<p>Hydric Soil Present? Yes _____ No <u>X</u></p>
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Remarks: The soil was very light in color and appeared to be imported as part of the adjacent fill. The profile was 50-75% gravel, rock, and debris.

HYDROLOGY

<p>Wetland Hydrology Indicators:</p> <p>Primary Indicators (minimum one required; check all that apply)</p> <p><input type="checkbox"/> Surface Water (A1)</p> <p><input type="checkbox"/> High Water Table (A2)</p> <p><input type="checkbox"/> Saturation (A3)</p> <p><input type="checkbox"/> Water Marks (B1)</p> <p><input type="checkbox"/> Sediment Deposits (B2)</p> <p><input type="checkbox"/> Drift Deposits (B3)</p> <p><input type="checkbox"/> Algal Mat or Crust (B4)</p> <p><input type="checkbox"/> Iron Deposits (B5)</p> <p><input type="checkbox"/> Surface Soil Cracks (B6)</p> <p><input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)</p> <p><input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)</p>	<p>Secondary Indicators (2 or more required)</p> <p><input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A and 4B)</p> <p><input type="checkbox"/> Salt Crust (B11)</p> <p><input type="checkbox"/> Aquatic Invertebrates (B13)</p> <p><input type="checkbox"/> Hydrogen Sulfide Odor (C1)</p> <p><input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)</p> <p><input type="checkbox"/> Presence of Reduced Iron (C4)</p> <p><input type="checkbox"/> Recent Iron Reduction in Plowed Soils (C6)</p> <p><input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p>	<p><input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A and 4B)</p> <p><input type="checkbox"/> Drainage Patterns (B10)</p> <p><input type="checkbox"/> Dry-Season Water Table (C2)</p> <p><input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)</p> <p><input type="checkbox"/> Geomorphic Position (D2)</p> <p><input type="checkbox"/> Shallow Aquitard (D3)</p> <p><input type="checkbox"/> FAC-Neutral Test (D5)</p> <p><input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)</p> <p><input type="checkbox"/> Frost-Heave Hummocks (D7)</p>
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<p>Field Observations:</p> <p>Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____</p> <p>Water table Present? Yes _____ No <u>X</u> Depth (inches): _____</p> <p>Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)</p>	<p>Wetland Hydrology Present? Yes _____ No <u>X</u></p>
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Describe Recorded Data (Unnamed Tributary gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: The soil surface was moist due to recent rain events but no other hydrology observed.

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

Project/Site: Marine Drive Proposed Development Project City/County: Whatcom County Sampling Date: Oct, 26 2020
 Applicant/Owner: ABC Recycling State: WA Sampling Point: DP-09
 Investigator(s): Joseph R. Pursley (Anchor QEA, LLC) Section, Township, Range: S44, T38, R2E
 Landform (hillslope, terrace, etc.): slop/depression mosaic Local relief (concave, convex, none): Concave Slope: 0-8%
 Subregion (LRR): Northwest Forests and Coast (LRR A) Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: Urban land – Whatcom - Labounty complex NWI Classification: PSSC
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" Present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____
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Remarks: For labeled Data Plot locations and site map please see Figure 5 in the "Wetland Delineation Report, Anchor QEA, Nov. 2020".

VEGETATION

	Absolute % Cover	Dominant Species?	Indicator Status?	
Tree Stratum (Plot size: _____)				
1. <u>Salix scouleriana</u>	15	Yes	FAC	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
2. <u>Betula papyrifera</u>	25	Yes	FAC	
3. _____				
4. _____				
5. _____				
50%= <u>20</u> 20%= <u>8</u> Total Cover: <u>40</u>				
Sapling/Shrub Stratum (Plot size: _____)				
1. <u>Cornus sericea</u>	55	Yes	FACW	Prevalence Index Worksheet: Total % Cover of: Multiply by: OBL species <u>0</u> x1 = <u>0</u> FACW species <u>55</u> x2 = <u>110</u> FAC species <u>65</u> x3 = <u>195</u> FACU species <u>0</u> x4 = <u>0</u> UPL species <u>0</u> x5 = <u>0</u> Column Totals: <u>120</u> (A) <u>305</u> (B) Prevalence Index = B/A = <u>2.5</u>
2. <u>Salix scouleriana</u>	10	No	FAC	
3. <u>Lonicera involucrata</u>	15	No	FAC	
4. _____				
5. _____				
50%= <u>40</u> 20%= <u>16</u> Total Cover: <u>80</u>				
Herb Stratum (Plot size: _____)				
1. _____				Hydrophytic Vegetation Indicators: _____ 1 - Rapid Test for Hydrophytic Vegetation <u>X</u> 2 - Dominance Test is >50% <u>X</u> 3 - Prevalence Index is ≤3.0 ¹ _____ 4 - Morphological Adaptation ¹ (Provide supporting data in Remarks or on a separate sheet) _____ 5 - Wetland Non-Vascular Plants ¹ _____ Problematic Hydrophytic Vegetation ¹ (Explain)
2. _____				
3. _____				
4. _____				
5. _____				
50%= <u>0</u> 20%= <u>0</u> Total Cover: <u>0</u>				
Woody Vine Stratum (Plot size: _____)				
1. _____				Hydrophytic Vegetation Present? Yes <u>X</u> No _____
2. _____				
Total Cover: <u>0</u>				
% Bare Ground in Herb Stratum <u>100</u> % Cover of Biotic Crust _____				

Remarks: Dense shrubs prevent the herb layer from developing.

SOIL

Sampling Point: DP-09

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		
0-10	10YR 3/1	100					SiL	
10-14	10YR 3/1	95	10YR 4/6	5	C	M	SiL	Bright redox concentrations, saturation
14-18	10YR 5/1	85	10YR 4/6	5	C	M	SiL	Redox in the depleted layer.

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils³:	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)	³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	
<input type="checkbox"/> Sandy Muck Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)		
<input type="checkbox"/> Sandy gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)		

Restrictive Layer (if present): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____
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Remarks: Depleted soils at 14 inches with water at 16 inches.

HYDROLOGY

Wetland Hydrology Indicators:	
<u>Primary Indicators (minimum one required; check all that apply)</u>	<u>Secondary Indicators (2 or more required)</u>
<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A and 4B)
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Plowed Soils (C6)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	

Field Observations: Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Water table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>16</u> Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>10</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____
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Describe Recorded Data (Unnamed Tributary gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: Depleted layer was dense. Hydrology was flowing in at 14 inches over depleted layer. Water pooled at 16 inches BGS.

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

Project/Site: Marine Drive Proposed Development Project City/County: Whatcom County Sampling Date: Oct, 26 2020
 Applicant/Owner: ABC Recycling State: WA Sampling Point: DP-10
 Investigator(s): Joseph R. Pursley (Anchor QEA, LLC) Section, Township, Range: S44, T38, R2E
 Landform (hillslope, terrace, etc.): Hillslope/terrace Local relief (concave, convex, none): Convex Slope: 0-8%
 Subregion (LRR): Northwest Forests and Coast (LRR A) Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: Urban land – Whatcom - Labouny complex NWI Classification: PSSC
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" Present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u>
Hydric Soil Present? Yes _____ No <u>X</u>	
Wetland Hydrology Present? Yes _____ No <u>X</u>	

Remarks: For labeled Data Plot locations and site map please see Figure 2 in the "Wetland Verification and Non-Compensatory Mitigation Plan".

VEGETATION

<p><u>Tree Stratum</u> (Plot size: _____)</p> <table border="1"> <thead> <tr> <th></th> <th>Absolute % Cover</th> <th>Dominant Species?</th> <th>Indicator Status?</th> </tr> </thead> <tbody> <tr> <td>1. <u>Acer macrophyllum</u></td> <td align="center">20</td> <td align="center">Yes</td> <td align="center">FACU</td> </tr> <tr> <td>2. <u>Thuja plicata</u></td> <td align="center">20</td> <td align="center">Yes</td> <td align="center">FAC</td> </tr> <tr> <td>3. <u>Betula papyrifera</u></td> <td align="center">15</td> <td align="center">Yes</td> <td align="center">FAC</td> </tr> <tr> <td>4. _____</td> <td></td> <td></td> <td></td> </tr> <tr> <td>5. _____</td> <td></td> <td></td> <td></td> </tr> <tr> <td>50%= <u>27.5</u> 20%= <u>11</u> Total Cover: <u>55</u></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p><u>Sapling/Shrub Stratum</u> (Plot size: _____) CHECK RANKED VALUES</p> <table border="1"> <thead> <tr> <th></th> <th>Absolute % Cover</th> <th>Dominant Species?</th> <th>Indicator Status?</th> </tr> </thead> <tbody> <tr> <td>1. <u>Symphoricarpos albus</u></td> <td align="center">45</td> <td align="center">Yes</td> <td align="center">FACU</td> </tr> <tr> <td>2. <u>Rosa nutkana</u></td> <td align="center">25</td> <td align="center">Yes</td> <td align="center">FAC</td> </tr> <tr> <td>3. <u>Cornus sericea</u></td> <td align="center">10</td> <td align="center">No</td> <td align="center">FAC</td> </tr> <tr> <td>4. _____</td> <td></td> <td></td> <td></td> </tr> <tr> <td>5. _____</td> <td></td> <td></td> <td></td> </tr> <tr> <td>50%= <u>40</u> 20%= <u>16</u> Total Cover: <u>80</u></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p><u>Herb Stratum</u> (Plot size: _____)</p> <table border="1"> <thead> <tr> <th></th> <th>Absolute % Cover</th> <th>Dominant Species?</th> <th>Indicator Status?</th> </tr> </thead> <tbody> <tr> <td>1. <u>Pteridium aquilinum</u></td> <td align="center">20</td> <td align="center">Yes</td> <td align="center">FACU</td> </tr> <tr> <td>2. _____</td> <td></td> <td></td> <td></td> </tr> <tr> <td>3. _____</td> <td></td> <td></td> <td></td> </tr> <tr> <td>4. _____</td> <td></td> <td></td> <td></td> </tr> <tr> <td>5. _____</td> <td></td> <td></td> <td></td> </tr> <tr> <td>6. _____</td> <td></td> <td></td> <td></td> </tr> <tr> <td>7. _____</td> <td></td> <td></td> <td></td> </tr> <tr> <td>8. _____</td> <td></td> <td></td> <td></td> </tr> <tr> <td>9. _____</td> <td></td> <td></td> <td></td> </tr> <tr> <td>50%= <u>10</u> 20%= <u>4</u> Total Cover: <u>20</u></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p><u>Woody Vine Stratum</u> (Plot size: _____)</p> <table border="1"> <tbody> <tr> <td>1. _____</td> <td></td> <td></td> <td></td> </tr> <tr> <td>2. _____</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Total Cover: <u>0</u></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>% Bare Ground in Herb Stratum <u>80</u> % Cover of Biotic Crust _____</p>		Absolute % Cover	Dominant Species?	Indicator Status?	1. <u>Acer macrophyllum</u>	20	Yes	FACU	2. <u>Thuja plicata</u>	20	Yes	FAC	3. <u>Betula papyrifera</u>	15	Yes	FAC	4. _____				5. _____				50%= <u>27.5</u> 20%= <u>11</u> Total Cover: <u>55</u>					Absolute % Cover	Dominant Species?	Indicator Status?	1. <u>Symphoricarpos albus</u>	45	Yes	FACU	2. <u>Rosa nutkana</u>	25	Yes	FAC	3. <u>Cornus sericea</u>	10	No	FAC	4. _____				5. _____				50%= <u>40</u> 20%= <u>16</u> Total Cover: <u>80</u>					Absolute % Cover	Dominant Species?	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Yes _____ No <u>X</u></p>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x1 = <u>0</u>	FACW species <u>0</u>	x2 = <u>0</u>	FAC species <u>70</u>	x3 = <u>210</u>	FACU species <u>85</u>	x4 = <u>340</u>	UPL species <u>0</u>	x5 = <u>0</u>	Column Totals: <u>155</u> (A)	<u>550</u> (B)	Prevalence Index = B/A = <u>3.5</u>	
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Remarks: The upland vegetation scrub-shrub layer was very dense with only tall Bracken fern in the herb layer.

SOIL

Sampling Point: DP-10

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	10YR 3/2	100					SiL	coarse roots
12-18	10YR 3/1	100					SiL	moist soil, not saturated

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

<p>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</p> <p><input type="checkbox"/> Histosol (A1)</p> <p><input type="checkbox"/> Histic Epipedon (A2)</p> <p><input type="checkbox"/> Black Histic (A3)</p> <p><input type="checkbox"/> Hydrogen Sulfide (A4)</p> <p><input type="checkbox"/> Depleted Below Dark Surface (A11)</p> <p><input type="checkbox"/> Thick Dark Surface (A12)</p> <p><input type="checkbox"/> Sandy Muck Mineral (S1)</p> <p><input type="checkbox"/> Sandy gleyed Matrix (S4)</p>	<p>Indicators for Problematic Hydric Soils³:</p> <p><input type="checkbox"/> Sandy Redox (S5)</p> <p><input type="checkbox"/> Stripped Matrix (S6)</p> <p><input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)</p> <p><input type="checkbox"/> Loamy Gleyed Matrix (F2)</p> <p><input type="checkbox"/> Depleted Matrix (F3)</p> <p><input type="checkbox"/> Redox Dark Surface (F6)</p> <p><input type="checkbox"/> Depleted Dark Surface (F7)</p> <p><input type="checkbox"/> Redox Depressions (F8)</p>	<p><input type="checkbox"/> 2 cm Muck (A10) (LRR B)</p> <p><input type="checkbox"/> Red Parent Material (TF2)</p> <p><input type="checkbox"/> Very Shallow Dark Surface (TF12)</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p> <p>³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.</p>
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<p>Restrictive Layer (if present):</p> <p>Type: _____</p> <p>Depth (inches): _____</p>	<p>Hydric Soil Present? Yes _____ No <u>X</u></p>
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Remarks: The soil below 12 inches was dark and moist but not saturated and it had no redox.

HYDROLOGY

<p>Wetland Hydrology Indicators:</p> <p>Primary Indicators (minimum one required; check all that apply)</p> <p><input type="checkbox"/> Surface Water (A1)</p> <p><input type="checkbox"/> High Water Table (A2)</p> <p><input type="checkbox"/> Saturation (A3)</p> <p><input type="checkbox"/> Water Marks (B1)</p> <p><input type="checkbox"/> Sediment Deposits (B2)</p> <p><input type="checkbox"/> Drift Deposits (B3)</p> <p><input type="checkbox"/> Algal Mat or Crust (B4)</p> <p><input type="checkbox"/> Iron Deposits (B5)</p> <p><input type="checkbox"/> Surface Soil Cracks (B6)</p> <p><input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)</p> <p><input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)</p>			<p>Secondary Indicators (2 or more required)</p> <p><input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A and 4B)</p> <p><input type="checkbox"/> Salt Crust (B11)</p> <p><input type="checkbox"/> Aquatic Invertebrates (B13)</p> <p><input type="checkbox"/> Hydrogen Sulfide Odor (C1)</p> <p><input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)</p> <p><input type="checkbox"/> Presence of Reduced Iron (C4)</p> <p><input type="checkbox"/> Recent Iron Reduction in Plowed Soils (C6)</p> <p><input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p>			<p><input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A and 4B)</p> <p><input type="checkbox"/> Drainage Patterns (B10)</p> <p><input type="checkbox"/> Dry-Season Water Table (C2)</p> <p><input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)</p> <p><input type="checkbox"/> Geomorphic Position (D2)</p> <p><input type="checkbox"/> Shallow Aquitard (D3)</p> <p><input type="checkbox"/> FAC-Neutral Test (D5)</p> <p><input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)</p> <p><input type="checkbox"/> Frost-Heave Hummocks (D7)</p>		
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<p>Field Observations:</p> <p>Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____</p> <p>Water table Present? Yes _____ No <u>X</u> Depth (inches): _____</p> <p>Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)</p>	<p>Wetland Hydrology Present? Yes _____ No <u>X</u></p>
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Describe Recorded Data (Unnamed Tributary gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: The soil surface was moist due to recent rain events.

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

Project/Site: Marine Drive Proposed Development Project City/County: Whatcom County Sampling Date: Oct, 26 2020
 Applicant/Owner: ABC Recycling State: WA Sampling Point: DP-11
 Investigator(s): Joseph R. Pursley (Anchor QEA, LLC) Section, Township, Range: S44, T38, R2E
 Landform (hillslope, terrace, etc.): slop/depression mosaic Local relief (concave, convex, none): Concave Slope: 0-8%
 Subregion (LRR): Northwest Forests and Coast (LRR A) Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: Urban land – Whatcom - Labounty complex NWI Classification: PSSC
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" Present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____
Hydric Soil Present? Yes <u>X</u> No _____	
Wetland Hydrology Present? Yes <u>X</u> No _____	

Remarks: For labeled Data Plot locations and site map please see Figure 5 in the "Wetland Delineation Report, Anchor QEA, Nov. 2020".

VEGETATION

	Absolute % Cover	Dominant Species?	Indicator Status?	
Tree Stratum (Plot size: _____)				
1. <u>Salix scouleriana</u>	<u>5</u>	No	FAC	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
2. <u>Betula papyrifera</u>	<u>30</u>	Yes	FAC	
3. _____				
4. _____				
5. _____				
50%= <u>17.5</u> 20%= <u>7</u> Total Cover: <u>35</u>				
Sapling/Shrub Stratum (Plot size: _____)				
1. <u>Cornus sericea</u>	<u>50</u>	Yes	FACW	Prevalence Index Worksheet: Total % Cover of: Multiply by: OBL species <u>0</u> x1 = <u>0</u> FACW species <u>50</u> x2 = <u>100</u> FAC species <u>55</u> x3 = <u>165</u> FACU species <u>0</u> x4 = <u>0</u> UPL species <u>0</u> x5 = <u>0</u> Column Totals: <u>105</u> (A) <u>265</u> (B) Prevalence Index = B/A = <u>2.5</u>
2. <u>Lonicera involucrata</u>	<u>20</u>	Yes	FAC	
3. _____				
4. _____				
5. _____				
50%= <u>35</u> 20%= <u>14</u> Total Cover: <u>70</u>				
Herb Stratum (Plot size: _____)				
1. _____				Hydrophytic Vegetation Indicators: _____ 1 - Rapid Test for Hydrophytic Vegetation <u>X</u> 2 - Dominance Test is >50% <u>X</u> 3 - Prevalence Index is ≤3.0 ¹ _____ 4 - Morphological Adaptation ¹ (Provide supporting data in Remarks or on a separate sheet) _____ 5 - Wetland Non-Vascular Plants ¹ _____ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
50%= <u>0</u> 20%= <u>0</u> Total Cover: <u>0</u>				
Woody Vine Stratum (Plot size: _____)				
1. _____				Hydrophytic Vegetation Present? Yes <u>X</u> No _____
2. _____				
Total Cover: <u>0</u>				
% Bare Ground in Herb Stratum <u>100</u> % Cover of Biotic Crust _____				

Remarks: Dense shrubs prevent the herb layer from developing.

SOIL

Sampling Point: DP-11

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		
0-8	10YR 3/1	100					SiL	Coarse roots
8-13	10YR 3/1	95	10YR 4/6	5	C	M	SiL	Bright redox concentrations, saturation
13-18	10YR 5/1	85	10YR 4/6	5	C	M	SCL	Redox in the depleted layer.

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils³:	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)	³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	
<input type="checkbox"/> Sandy Muck Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)		
<input type="checkbox"/> Sandy gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)		

Restrictive Layer (if present): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Remarks: Depleted soils at 13 inches with water at 16 inches.

HYDROLOGY

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

Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>16</u> Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>8</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Describe Recorded Data (Unnamed Tributary gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: Depleted layer was dense. Hydrology was flowing in at 13 inches over depleted layer. Water pooled at 16 inches BGS.

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

Project/Site: Marine Drive Proposed Development Project City/County: Whatcom County Sampling Date: Oct, 26 2020
 Applicant/Owner: ABC Recycling State: WA Sampling Point: DP-12
 Investigator(s): Joseph R. Pursley (Anchor QEA, LLC) Section, Township, Range: S44, T38, R2E
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope: 0-8%
 Subregion (LRR): Northwest Forests and Coast (LRR A) Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: Urban land – Whatcom - Labouny complex NWI Classification: PSSC
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" Present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u>
Hydric Soil Present? Yes _____ No <u>X</u>	
Wetland Hydrology Present? Yes _____ No <u>X</u>	

Remarks: For labeled Data Plot locations and site map please see Figure 2 in the "Wetland Verification and Non-Compensatory Mitigation Plan".

VEGETATION

				Dominance Test worksheet:	
<u>Tree Stratum</u> (Plot size: _____)				Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)	
1. <u>Betula papyrifera</u>	Absolute % Cover: <u>20</u>	Dominant Species? <u>Yes</u>	Indicator Status? <u>FAC</u>	Total Number of Dominant Species Across All Strata: <u>4</u> (B)	
2. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50%</u> (A/B)	
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
50%= <u>10</u> 20%= <u>4</u> Total Cover: <u>20</u>					
<u>Sapling/Shrub Stratum</u> (Plot size: _____)				Prevalence Index Worksheet:	
1. <u>Symphoricarpos albus</u>	Absolute % Cover: <u>50</u>	Dominant Species? <u>Yes</u>	Indicator Status? <u>FACU</u>	Total % Cover of: _____ Multiply by: _____	
2. <u>Rosa nutkana</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	OBL species <u>0</u> x1 = <u>0</u>	
3. <u>Cornus sericea</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	FACW species <u>0</u> x2 = <u>0</u>	
4. _____	_____	_____	_____	FAC species <u>50</u> x3 = <u>150</u>	
5. _____	_____	_____	_____	FACU species <u>80</u> x4 = <u>320</u>	
50%= <u>40</u> 20%= <u>16</u> Total Cover: <u>80</u>				UPL species <u>0</u> x5 = <u>0</u>	
<u>Herb Stratum</u> (Plot size: _____)				Column Totals: <u>130</u> (A) <u>470</u> (B)	
1. <u>Pteridium aquilinum</u>	Absolute % Cover: <u>30</u>	Dominant Species? <u>Yes</u>	Indicator Status? <u>FACU</u>	Prevalence Index = B/A = <u>3.6</u>	
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
8. _____	_____	_____	_____		
9. _____	_____	_____	_____		
50%= <u>15</u> 20%= <u>6</u> Total Cover: <u>30</u>				Hydrophytic Vegetation Indicators:	
<u>Woody Vine Stratum</u> (Plot size: _____)				_____ 1 - Rapid Test for Hydrophytic Vegetation	
1. _____	_____	_____	_____	_____ 2 - Dominance Test is >50%	
2. _____	_____	_____	_____	_____ 3 - Prevalence Index is ≤3.0 ¹	
Total Cover: <u>0</u>				_____ 4 - Morphological Adaptation ¹ (Provide supporting data in Remarks or on a separate sheet)	
% Bare Ground in Herb Stratum <u>70</u> % Cover of Biotic Crust _____				_____ 5 - Wetland Non-Vascular Plants ¹	
				_____ Problematic Hydrophytic Vegetation ¹ (Explain)	
				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
				Hydrophytic Vegetation Present? Yes _____ No <u>X</u>	

Remarks: The upland vegetation scrub-shrub layer was very dense with only tall Bracken fern in the herb layer.

SOIL

Sampling Point: DP-12

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		
0-10	10YR 3/2	100					SiL	coarse roots
10-18	10YR 3/1	100					SiL	dense soil, very few roots.

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

<p>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</p> <p><input type="checkbox"/> Histosol (A1)</p> <p><input type="checkbox"/> Histic Epipedon (A2)</p> <p><input type="checkbox"/> Black Histic (A3)</p> <p><input type="checkbox"/> Hydrogen Sulfide (A4)</p> <p><input type="checkbox"/> Depleted Below Dark Surface (A11)</p> <p><input type="checkbox"/> Thick Dark Surface (A12)</p> <p><input type="checkbox"/> Sandy Muck Mineral (S1)</p> <p><input type="checkbox"/> Sandy gleyed Matrix (S4)</p>	<p>Indicators for Problematic Hydric Soils³:</p> <p><input type="checkbox"/> Sandy Redox (S5)</p> <p><input type="checkbox"/> Stripped Matrix (S6)</p> <p><input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)</p> <p><input type="checkbox"/> Loamy Gleyed Matrix (F2)</p> <p><input type="checkbox"/> Depleted Matrix (F3)</p> <p><input type="checkbox"/> Redox Dark Surface (F6)</p> <p><input type="checkbox"/> Depleted Dark Surface (F7)</p> <p><input type="checkbox"/> Redox Depressions (F8)</p>	<p><input type="checkbox"/> 2 cm Muck (A10) (LRR B)</p> <p><input type="checkbox"/> Red Parent Material (TF2)</p> <p><input type="checkbox"/> Very Shallow Dark Surface (TF12)</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p> <p>³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.</p>
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<p>Restrictive Layer (if present):</p> <p>Type: _____</p> <p>Depth (inches): _____</p>	<p>Hydric Soil Present? Yes _____ No <u>X</u></p>
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Remarks: The soil below 10 inches was very dense but had no OR's or redox.

HYDROLOGY

<p>Wetland Hydrology Indicators:</p> <p>Primary Indicators (minimum one required; check all that apply)</p> <p><input type="checkbox"/> Surface Water (A1)</p> <p><input type="checkbox"/> High Water Table (A2)</p> <p><input type="checkbox"/> Saturation (A3)</p> <p><input type="checkbox"/> Water Marks (B1)</p> <p><input type="checkbox"/> Sediment Deposits (B2)</p> <p><input type="checkbox"/> Drift Deposits (B3)</p> <p><input type="checkbox"/> Algal Mat or Crust (B4)</p> <p><input type="checkbox"/> Iron Deposits (B5)</p> <p><input type="checkbox"/> Surface Soil Cracks (B6)</p> <p><input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)</p> <p><input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)</p>		<p>Secondary Indicators (2 or more required)</p> <p><input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A and 4B)</p> <p><input type="checkbox"/> Salt Crust (B11)</p> <p><input type="checkbox"/> Aquatic Invertebrates (B13)</p> <p><input type="checkbox"/> Hydrogen Sulfide Odor (C1)</p> <p><input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)</p> <p><input type="checkbox"/> Presence of Reduced Iron (C4)</p> <p><input type="checkbox"/> Recent Iron Reduction in Plowed Soils (C6)</p> <p><input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p>	<p><input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A and 4B)</p> <p><input type="checkbox"/> Drainage Patterns (B10)</p> <p><input type="checkbox"/> Dry-Season Water Table (C2)</p> <p><input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)</p> <p><input type="checkbox"/> Geomorphic Position (D2)</p> <p><input type="checkbox"/> Shallow Aquitard (D3)</p> <p><input type="checkbox"/> FAC-Neutral Test (D5)</p> <p><input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)</p> <p><input type="checkbox"/> Frost-Heave Hummocks (D7)</p>
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<p>Field Observations:</p> <p>Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____</p> <p>Water table Present? Yes _____ No <u>X</u> Depth (inches): _____</p> <p>Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)</p>	<p>Wetland Hydrology Present? Yes _____ No <u>X</u></p>
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Describe Recorded Data (Unnamed Tributary gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: The soil surface was moist due to recent rain events.

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

Project/Site: Marine Drive Proposed Development Project City/County: Whatcom County Sampling Date: Oct, 26 2020
 Applicant/Owner: ABC Recycling State: WA Sampling Point: DP-13
 Investigator(s): Joseph R. Pursley (Anchor QEA, LLC) Section, Township, Range: S44, T38, R2E
 Landform (hillslope, terrace, etc.): closed depression Local relief (concave, convex, none): Concave Slope: 0-8%
 Subregion (LRR): Northwest Forests and Coast (LRR A) Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: Urban land – Whatcom - Labounty complex NWI Classification: PSSC
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No _____ (If no, explain in Remarks)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" Present? Yes No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks: For labeled Data Plot locations and site map please see Figure 5 in the "Wetland Delineation Report, Anchor QEA, Nov. 2020".

VEGETATION

<u>Tree Stratum</u> (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>2</u> (B)	
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)	
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
50%= <u>0</u> 20%= <u>0</u> Total Cover: <u>0</u>					
<u>Sapling/Shrub Stratum</u> (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status?	Prevalence Index Worksheet:	
1. <u>Cornus sericea</u>	50	Yes	FACW	Total % Cover of: Multiply by:	
2. <u>Lonicera involucrata</u>	10	No	FAC	OBL species <u>0</u> x1 = <u>0</u>	
3. <u>Salix scouleriana</u>	30	Yes	FAC	FACW species <u>50</u> x2 = <u>100</u>	
4. _____	_____	_____	_____	FAC species <u>40</u> x3 = <u>120</u>	
5. _____	_____	_____	_____	FACU species <u>0</u> x4 = <u>0</u>	
50%= <u>45</u> 20%= <u>18</u> Total Cover: <u>90</u>					
UPL species <u>0</u> x5 = <u>0</u>					
Column Totals: <u>90</u> (A) <u>220</u> (B)					
				Prevalence Index = B/A = <u>2.4</u>	
<u>Herb Stratum</u> (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status?	Hydrophytic Vegetation Indicators:	
1. _____	_____	_____	_____	_____ 1 - Rapid Test for Hydrophytic Vegetation	
2. _____	_____	_____	_____	<input checked="" type="checkbox"/> 2 - Dominance Test is >50%	
3. _____	_____	_____	_____	<input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹	
4. _____	_____	_____	_____	_____ 4 - Morphological Adaptation ¹ (Provide supporting data in Remarks or on a separate sheet)	
5. _____	_____	_____	_____	_____ 5 - Wetland Non-Vascular Plants ¹	
6. _____	_____	_____	_____	_____ Problematic Hydrophytic Vegetation ¹ (Explain)	
7. _____	_____	_____	_____		
8. _____	_____	_____	_____		
9. _____	_____	_____	_____		
50%= <u>0</u> 20%= <u>0</u> Total Cover: <u>0</u>					
<u>Woody Vine Stratum</u> (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status?	Hydrophytic Vegetation Present?	
1. _____	_____	_____	_____	Yes <input checked="" type="checkbox"/> No _____	
2. _____	_____	_____	_____		
Total Cover: <u>0</u>					
% Bare Ground in Herb Stratum <u>100</u> % Cover of Biotic Crust _____					

Remarks: Dense shrubs and closed depression prevent the herb layer from developing.

SOIL

Sampling Point: DP-13

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 3/1	100					SiL	Coarse roots
6-12	10YR 3/1	90	10YR 4/6	10	C	M	SiL	Bright redox concentrations, saturation
12-18	10YR 5/1	85	10YR 4/6	15	C	M	SCL	Redox in the depleted layer.

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils³:	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)	³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	
<input type="checkbox"/> Sandy Muck Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)		
<input type="checkbox"/> Sandy gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)		

Restrictive Layer (if present): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
--	---

Remarks: Depleted soils at 12 inches with water at 16 inches.

HYDROLOGY

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

Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>16</u> Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>8</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
--	---

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

Remarks: Depleted layer was dense. Hydrology was flowing in at 12 inches over depleted layer. Water pooled at 16 inches BGS.

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

Project/Site: Marine Drive Proposed Development Project City/County: Whatcom County Sampling Date: Oct, 26 2020
 Applicant/Owner: ABC Recycling State: WA Sampling Point: DP-14
 Investigator(s): Joseph R. Pursley (Anchor QEA, LLC) Section, Township, Range: S44, T38, R2E
 Landform (hillslope, terrace, etc.): Hillslope/terrace Local relief (concave, convex, none): Convex Slope: 0-8%
 Subregion (LRR): Northwest Forests and Coast (LRR A) Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: Urban land – Whatcom - Labouny complex NWI Classification: PSSC
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" Present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u>
Hydric Soil Present? Yes _____ No <u>X</u>	
Wetland Hydrology Present? Yes _____ No <u>X</u>	

Remarks: For labeled Data Plot locations and site map please see Figure 2 in the "Wetland Verification and Non-Compensatory Mitigation Plan".

VEGETATION

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status?	Dominance Test worksheet:
1. <u>Acer macrophyllum</u>	<u>10</u>	<u>Yes</u>	<u>FACU</u>	Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A)
2. <u>Betula papyrifera</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>6</u> (B)
5. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50%</u> (A/B)
50%= <u>15</u> 20%= <u>6</u> Total Cover: <u>30</u>				
Sapling/Shrub Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status?	Prevalence Index Worksheet:
1. <u>Symphoricarpos albus</u>	<u>45</u>	<u>Yes</u>	<u>FACU</u>	Total % Cover of: Multiply by: OBL species <u>0</u> x1 = <u>0</u> FACW species <u>25</u> x2 = <u>50</u> FAC species <u>40</u> x3 = <u>120</u> FACU species <u>65</u> x4 = <u>260</u> UPL species <u>0</u> x5 = <u>0</u> Column Totals: <u>130</u> (A) <u>430</u> (B) Prevalence Index = B/A = <u>3.3</u>
2. <u>Cornus sericea</u>	<u>25</u>	<u>Yes</u>	<u>FACW</u>	
3. <u>Rubus armeniacus</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50%= <u>45</u> 20%= <u>18</u> Total Cover: <u>90</u>				
Herb Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status?	Hydrophytic Vegetation Indicators:
1. <u>Pteridium aquilinum</u>	<u>10</u>	<u>Yes</u>	<u>FACU</u>	_____ 1 - Rapid Test for Hydrophytic Vegetation _____ 2 - Dominance Test is >50% _____ 3 - Prevalence Index is ≤3.0 ¹ _____ 4 - Morphological Adaptation ¹ (Provide supporting data in Remarks or on a separate sheet) _____ 5 - Wetland Non-Vascular Plants ¹ _____ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
50%= <u>5</u> 20%= <u>2</u> Total Cover: <u>10</u>				
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status?	Hydrophytic Vegetation Present?
1. _____	_____	_____	_____	Yes _____ No <u>X</u>
2. _____	_____	_____	_____	
Total Cover: <u>0</u>				
% Bare Ground in Herb Stratum <u>90</u> % Cover of Biotic Crust _____				

Remarks: The upland vegetation scrub-shrub layer was very dense with only tall Bracken fern in the herb layer.

SOIL

Sampling Point: DP-14

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		
0-8	10YR 3/3	100					SiL	coarse roots
8-18	10YR 3/2	100					SiL	moist soil, not saturated

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

<p>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</p> <p><input type="checkbox"/> Histic Epipedon (A2)</p> <p><input type="checkbox"/> Black Histic (A3)</p> <p><input type="checkbox"/> Hydrogen Sulfide (A4)</p> <p><input type="checkbox"/> Depleted Below Dark Surface (A11)</p> <p><input type="checkbox"/> Thick Dark Surface (A12)</p> <p><input type="checkbox"/> Sandy Muck Mineral (S1)</p> <p><input type="checkbox"/> Sandy gleyed Matrix (S4)</p>	<p>Indicators for Problematic Hydric Soils³:</p> <p><input type="checkbox"/> 2 cm Muck (A10) (LRR B)</p> <p><input type="checkbox"/> Red Parent Material (TF2)</p> <p><input type="checkbox"/> Very Shallow Dark Surface (TF12)</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p> <p>³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.</p>
<p><input type="checkbox"/> Histosol (A1)</p> <p><input type="checkbox"/> Histic Epipedon (A2)</p> <p><input type="checkbox"/> Black Histic (A3)</p> <p><input type="checkbox"/> Hydrogen Sulfide (A4)</p> <p><input type="checkbox"/> Depleted Below Dark Surface (A11)</p> <p><input type="checkbox"/> Thick Dark Surface (A12)</p> <p><input type="checkbox"/> Sandy Muck Mineral (S1)</p> <p><input type="checkbox"/> Sandy gleyed Matrix (S4)</p>	<p><input type="checkbox"/> Sandy Redox (S5)</p> <p><input type="checkbox"/> Stripped Matrix (S6)</p> <p><input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)</p> <p><input type="checkbox"/> Loamy Gleyed Matrix (F2)</p> <p><input type="checkbox"/> Depleted Matrix (F3)</p> <p><input type="checkbox"/> Redox Dark Surface (F6)</p> <p><input type="checkbox"/> Depleted Dark Surface (F7)</p> <p><input type="checkbox"/> Redox Depressions (F8)</p>

<p>Restrictive Layer (if present):</p> <p>Type: _____</p> <p>Depth (inches): _____</p>	<p>Hydric Soil Present? Yes _____ No <u>X</u></p>
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Remarks: The soil below 12 inches was dark and moist but not saturated and it had no redox.

HYDROLOGY

<p>Wetland Hydrology Indicators:</p> <p>Primary Indicators (minimum one required; check all that apply)</p> <p><input type="checkbox"/> Surface Water (A1)</p> <p><input type="checkbox"/> High Water Table (A2)</p> <p><input type="checkbox"/> Saturation (A3)</p> <p><input type="checkbox"/> Water Marks (B1)</p> <p><input type="checkbox"/> Sediment Deposits (B2)</p> <p><input type="checkbox"/> Drift Deposits (B3)</p> <p><input type="checkbox"/> Algal Mat or Crust (B4)</p> <p><input type="checkbox"/> Iron Deposits (B5)</p> <p><input type="checkbox"/> Surface Soil Cracks (B6)</p> <p><input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)</p> <p><input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)</p>	<p>Secondary Indicators (2 or more required)</p> <p><input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A and 4B)</p> <p><input type="checkbox"/> Salt Crust (B11)</p> <p><input type="checkbox"/> Aquatic Invertebrates (B13)</p> <p><input type="checkbox"/> Hydrogen Sulfide Odor (C1)</p> <p><input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)</p> <p><input type="checkbox"/> Presence of Reduced Iron (C4)</p> <p><input type="checkbox"/> Recent Iron Reduction in Plowed Soils (C6)</p> <p><input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p>	<p>Secondary Indicators (2 or more required)</p> <p><input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A and 4B)</p> <p><input type="checkbox"/> Drainage Patterns (B10)</p> <p><input type="checkbox"/> Dry-Season Water Table (C2)</p> <p><input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)</p> <p><input type="checkbox"/> Geomorphic Position (D2)</p> <p><input type="checkbox"/> Shallow Aquitard (D3)</p> <p><input type="checkbox"/> FAC-Neutral Test (D5)</p> <p><input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)</p> <p><input type="checkbox"/> Frost-Heave Hummocks (D7)</p>
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<p>Field Observations:</p> <p>Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____</p> <p>Water table Present? Yes _____ No <u>X</u> Depth (inches): _____</p> <p>Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)</p>	<p>Wetland Hydrology Present? Yes _____ No <u>X</u></p>
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Describe Recorded Data (Unnamed Tributary gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: The soil surface was moist due to recent rain events.

Appendix B

Precipitation Data

Marine Drive Wetland Delineation - Precipitation Data

January 2020 – Oct 2020

AgACIS								
Copy CSV Excel PDF Print X								
WETS Station: BELLINGHAM INTL AP, WA Requested years: 2000 - 2020								
Month	Avg Max Temp	Avg Min Temp	Avg Mean Temp	Avg Precip	30% chance precip less than	30% chance precip more than	Avg number days precip 0.10 or more	Avg Snowfall
Jan	46.2	33.8	40.0	4.46	3.48	5.15	12	-
Feb	47.8	33.5	40.6	2.78	2.17	3.21	8	-
Mar	51.8	36.9	44.3	3.54	2.68	4.13	11	-
Apr	57.0	40.8	48.9	2.63	1.85	3.12	8	-
May	63.2	46.1	54.6	2.24	1.39	2.71	6	-
Jun	67.4	51.1	59.2	1.55	1.03	1.86	5	-
Jul	72.4	54.4	63.4	0.69	0.32	0.84	2	-
Aug	72.8	54.1	63.4	1.04	0.32	1.23	3	-
Sep	67.5	49.1	58.3	2.19	1.59	2.61	6	-
Oct	58.4	42.9	50.6	3.88	2.53	4.66	9	-
Nov	50.6	37.4	44.0	4.84	3.66	5.64	11	-
Dec	44.9	33.5	39.2	-	-	-	-	-
Annual:					-	-		
Average	58.3	42.8	50.5	-	-	-	-	-
Total	-	-	-	-			-	-

STATS TABLE - total precipitation (inches)												
Yr	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2020	7.02	3.94	2.96	1.43	3.08	2.05	0.86	1.28	2.19	3.50		

Sources:

AgACIS (Agricultural Applied Climate Information System), 2020. Bellingham International Airport: Monthly Summarized Precipitation. Accessed Nov. 2, 2020. Available at: <http://agacis.rcc-acis.org/>
 AgACIS, 2020. WETS Table: Bellingham International Airport, WA, 1999 to 2019. Agricultural Applied Climate Information System. Accessed Nov. 2, 2020. Available at: <http://agacis.rcc-acis.org/>

Appendix C

Ecology Wetland Ratings Forms and Figures

Wetland A Rating Forms

Wetland name or number A

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland A (Marine Drive, Whatcom Co.) Date of site visit: 10/20/2020
 Rated by Joseph R. Pursley Trained by Ecology? Yes No Date of training 06/2015
 HGM Class used for rating Depressional Wetland has multiple HGM classes? Y N

NOTE: Form is not complete without the figures requested (figures can be combined).
 Source of base aerial photo/map Google Earth

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

1. Category of wetland based on FUNCTIONS

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

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
<i>Circle the appropriate ratings</i>				
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	TOTAL
Score Based on Ratings	6	5	4	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

2. Category based on SPECIAL CHARACTERISTICS of wetland

CHARACTERISTIC	CATEGORY
Estuarine	I II
Wetland of High Conservation Value	I
Bog	I
Mature Forest	I
Old Growth Forest	I
Coastal Lagoon	I II
Interdunal	I II III IV
None of the above	

Wetland name or number A

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

Lake Fringe Wetlands

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

Slope Wetlands

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

HGM Classification of Wetlands in Western Washington

For questions 1-7, 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 1-7 apply, and go to Question 8.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Wetland name or number A

NO – go to 6

YES – The wetland class is **Riverine**

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

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

NO – go to 7

YES – The wetland class is **Depressional**

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

NO – go to 8

YES – The wetland class is **Depressional**

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

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

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

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

Wetland name or number A

DEPRESSIONAL AND FLATS WETLANDS		
Water Quality Functions - Indicators that the site functions to improve water quality		
D 1.0. Does the site have the potential to improve water quality?		
D 1.1. <u>Characteristics of surface water outflows from the wetland:</u> Wetland is a depression or flat depression (QUESTION 7 on key) with no surface water leaving it (no outlet). Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet. Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch.	points = 3 points = 2 points = 1 points = 1	1
D 1.2. <u>The soil 2 in below the surface (or duff layer) is true clay or true organic (use NRCS definitions).</u> Yes = 4 No = 0		0
D 1.3. <u>Characteristics and distribution of persistent plants (Emergent, Scrub-shrub, and/or Forested Cowardin classes):</u> Wetland has persistent, ungrazed, plants > 95% of area Wetland has persistent, ungrazed, plants > ½ of area Wetland has persistent, ungrazed plants > 1/10 of area Wetland has persistent, ungrazed plants < 1/10 of area	points = 5 points = 3 points = 1 points = 0	5
D 1.4. <u>Characteristics of seasonal ponding or inundation:</u> <i>This is the area that is ponded for at least 2 months. See description in manual.</i> Area seasonally ponded is > ½ total area of wetland Area seasonally ponded is > ¼ total area of wetland Area seasonally ponded is < ¼ total area of wetland	points = 4 points = 2 points = 0	0
Total for D 1 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 2.0. Does the landscape have the potential to support the water quality function of the site?		
D 2.1. Does the wetland unit receive stormwater discharges?	Yes = 1 No = 0	1
D 2.2. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants?	Yes = 1 No = 0	1
D 2.3. Are there septic systems within 250 ft of the wetland?	Yes = 1 No = 0	0
D 2.4. Are there other sources of pollutants coming into the wetland that are not listed in questions D 2.1-D 2.3? Source <u>Homeless encampment</u> (human and domestic animal waste).	Yes = 1 No = 0	1
Total for D 2 Add the points in the boxes above		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, lake, or marine water 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 an aquatic resource is on the 303(d) list?	Yes = 1 No = 0	0
D 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality (answer YES if there is a TMDL for the basin in which the unit is found)?	Yes = 2 No = 0	0
Total for D 3 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

Wetland name or number A

DEPRESSIONAL AND FLATS WETLANDS

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

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

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

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

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

D 6.0. Are the hydrologic functions provided by the site valuable to society?		
D 6.1. The unit is in a landscape that has flooding problems. Choose the description that best matches conditions around the wetland unit being rated. Do not add points. Choose the highest score if more than one condition is met.		
The wetland captures surface water that would otherwise flow down-gradient into areas where flooding has damaged human or natural resources (e.g., houses or salmon redds):		0
• Flooding occurs in a sub-basin that is immediately down-gradient of unit.	points = 2	
• Surface flooding problems are in a sub-basin farther down-gradient.	points = 1	
Flooding from groundwater is an issue in the sub-basin.	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. Explain why <u>Wetland drains to gravel ditch and infiltrates</u>	points = 0	
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	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

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
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, not Cowardin classes)	
Trees or shrubs $> \frac{2}{3}$ area of the wetland	points = 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

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
R 2.2. Does the contributing basin to the wetland include a UGA or incorporated area?	Yes = 1 No = 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
R 2.4. Is $> 10\%$ of the area within 150 ft of the wetland in land uses that generate pollutants?	Yes = 1 No = 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 Other sources _____	Yes = 1 No = 0
Total for R 2	Add the points in the boxes above

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
R 3.2. Is the wetland along a stream or river that has TMDL limits for nutrients, toxics, or pathogens?	Yes = 1 No = 0
R 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality? (<i>answer YES if there is a TMDL for the drainage in which the unit is found</i>)	Yes = 2 No = 0
Total for R 3	Add the points in the boxes above

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

Record the rating on the first page

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?	
<p>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></p> <p>If the ratio is more than 20 points = 9 If the ratio is 10-20 points = 6 If the ratio is 5-<10 points = 4 If the ratio is 1-<5 points = 2 If the ratio is < 1 points = 1</p>	
<p>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 <u>NOT</u> Cowardin classes).</i></p> <p>Forest or shrub for >¹/₃ area OR emergent plants > ²/₃ area points = 7 Forest or shrub for > ¹/₁₀ area OR emergent plants > ¹/₃ area points = 4 Plants do not meet above criteria points = 0</p>	
Total for R 4	Add the points in the boxes above

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	Add the points in the boxes above

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?	
<p>R 6.1. Distance to the nearest areas downstream that have flooding problems? <i>Choose the description that best fits the site.</i></p> <p>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) points = 2 Surface flooding problems are in a sub-basin farther down-gradient points = 1 No flooding problems anywhere downstream points = 0</p>	
<p>R 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan?</p> <p style="text-align:right">Yes = 2 No = 0</p>	
Total for R 6	Add the points in the boxes above

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

Wetland name or number A

LAKE FRINGE WETLANDS

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

L 1.0. Does the site have the potential to improve water quality?	
L 1.1. Average width of plants along the lakeshore (use polygons of Cowardin classes):	
Plants are more than 33 ft (10 m) wide	points = 6
Plants are more than 16 ft (5 m) wide and <33 ft	points = 3
Plants are more than 6 ft (2 m) wide and <16 ft	points = 1
Plants are less than 6 ft wide	points = 0
L 1.2. Characteristics of the plants in the wetland: Choose the appropriate description that results in the highest points, and do not include any open water in your estimate of coverage. The herbaceous plants can be either the dominant form or as an understory in a shrub or forest community. These are not Cowardin classes. Area of cover is total cover in the unit, but it can be in patches. Herbaceous does not include aquatic bed.	
Cover of herbaceous plants is >90% of the vegetated area	points = 6
Cover of herbaceous plants is > ² / ₃ of the vegetated area	points = 4
Cover of herbaceous plants is > ¹ / ₃ of the vegetated area	points = 3
Other plants that are not aquatic bed > ² / ₃ unit	points = 3
Other plants that are not aquatic bed in > ¹ / ₃ vegetated area	points = 1
Aquatic bed plants and open water cover > ² / ₃ of the unit	points = 0
Total for L 1	Add the points in the boxes above

Rating of Site Potential If score is: 8-12 = H 4-7 = M 0-3 = L *Record the rating on the first page*

L 2.0. Does the landscape have the potential to support the water quality function of the site?	
L 2.1. Is the lake used by power boats?	Yes = 1 No = 0
L 2.2. Is > 10% of the area within 150 ft of wetland unit on the upland side in land uses that generate pollutants?	Yes = 1 No = 0
L 2.3. Does the lake have problems with algal blooms or excessive plant growth such as milfoil?	Yes = 1 No = 0
Total for L 2	Add the points in the boxes above

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

L 3.0. Is the water quality improvement provided by the site valuable to society?	
L 3.1. Is the lake on the 303(d) list of degraded aquatic resources?	Yes = 1 No = 0
L 3.2. Is the lake in a sub-basin where water quality is an issue (at least one aquatic resource in the basin is on the 303(d) list)?	Yes = 1 No = 0
L 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 lake or basin in which the unit is found.	Yes = 2 No = 0
Total for L 3	Add the points in the boxes above

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

Wetland name or number A

LAKE FRINGE WETLANDS

Hydrologic Functions - Indicators that the wetland unit functions to reduce shoreline erosion

L 4.0. Does the site have the potential to reduce shoreline erosion?		
L 4.1. Distance along shore and average width of Cowardin classes along the lakeshore (do not include Aquatic bed): <i>Choose the highest scoring description that matches conditions in the wetland.</i>		
> ¾ of distance is Scrub-shrub or Forested at least 33 ft (10 m) wide	points = 6	
> ¾ of distance is Scrub-shrub or Forested at least 6 ft (2 m) wide	points = 4	
> ¼ distance is Scrub-shrub or Forested at least 33 ft (10 m) wide	points = 4	
Plants are at least 6 ft (2 m) wide (any type except Aquatic bed)	points = 2	
Plants are less than 6 ft (2 m) wide (any type except Aquatic bed)	points = 0	

Rating of Site Potential: If score is: 6 = M 0-5 = L

Record the rating on the first page

L 5.0. Does the landscape have the potential to support the hydrologic functions of the site?		
L 5.1. Is the lake used by power boats with more than 10 hp?	Yes = 1 No = 0	
L 5.2. Is the fetch on the lake side of the unit at least 1 mile in distance?	Yes = 1 No = 0	
Total for L 5	Add the points in the boxes above	

Rating of Landscape Potential If score is: 2 = H 1 = M 0 = L

Record the rating on the first page

L 6.0. Are the hydrologic functions provided by the site valuable to society?		
L 6.1. Are there resources along the shore that can be impacted by erosion? If more than one resource is present, choose the one with the highest score.		
There are human structures or old growth/mature forests within 25 ft of OHWM of the shore in the unit	points = 2	
There are nature trails or other paths and recreational activities within 25 ft of OHWM	points = 1	
Other resources that could be impacted by erosion	points = 1	
There are no resources that can be impacted by erosion along the shores of the unit	points = 0	

Rating of Value: If score is: 2 = H 1 = M 0 = L

Record the rating on the first page

NOTES and FIELD OBSERVATIONS:

SLOPE WETLANDS

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

S 1.0. Does the site have the potential to improve water quality?		
S 1.1. Characteristics of the average slope of the wetland: <i>(a 1% slope has a 1 ft vertical drop in elevation for every 100 ft of horizontal distance)</i>		
Slope is 1% or less		points = 3
Slope is > 1%-2%		points = 2
Slope is > 2%-5%		points = 1
Slope is greater than 5%		points = 0
S 1.2. <u>The soil 2 in below the surface (or duff layer)</u> is true clay or true organic <i>(use NRCS definitions)</i> : Yes = 3 No = 0		
S 1.3. Characteristics of the plants in the wetland that trap sediments and pollutants: Choose the points appropriate for the description that best fits the plants in the wetland. <i>Dense means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 in.</i>		
Dense, uncut, herbaceous plants > 90% of the wetland area		points = 6
Dense, uncut, herbaceous plants > ½ of area		points = 3
Dense, woody, plants > ½ of area		points = 2
Dense, uncut, herbaceous plants > ¼ of area		points = 1
Does not meet any of the criteria above for plants		points = 0
Total for S 1	Add the points in the boxes above	

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

S 2.0. Does the landscape have the potential to support the water quality function of the site?		
S 2.1. Is > 10% of the area within 150 ft on the uphill side of the wetland in land uses that generate pollutants?		Yes = 1 No = 0
S 2.2. Are there other sources of pollutants coming into the wetland that are not listed in question S 2.1? Other sources _____		Yes = 1 No = 0
Total for S 2	Add the points in the boxes above	

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

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

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

Wetland name or number A

SLOPE WETLANDS

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

S 4.0. Does the site have the potential to reduce flooding and stream erosion?

S 4.1. Characteristics of plants that reduce the velocity of surface flows during storms: Choose the points appropriate for the description that best fits conditions in the wetland. <i>Stems of plants should be thick enough (usually > 1/8 in), or dense enough, to remain erect during surface flows.</i>	
Dense, uncut, rigid plants cover > 90% of the area of the wetland	points = 1
All other conditions	points = 0

Rating of Site Potential If score is: 1 = M 0 = L

Record the rating on the first page

S 5.0. Does the landscape have the potential to support the hydrologic functions of the site?

S 5.1. Is more than 25% of the area within 150 ft upslope of wetland in land uses or cover that generate excess surface runoff?	Yes = 1 No = 0
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Rating of Landscape Potential If score is: 1 = M 0 = L

Record the rating on the first page

S 6.0. Are the hydrologic functions provided by the site valuable to society?

S 6.1. Distance to the nearest areas downstream that have flooding problems:	
The sub-basin immediately down-gradient of site has flooding problems that result in damage to human or natural resources (e.g., houses or salmon redds)	points = 2
Surface flooding problems are in a sub-basin farther down-gradient	points = 1
No flooding problems anywhere downstream	points = 0

S 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
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Total for S 6	Add the points in the boxes above
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Rating of Value If score is: 2-4 = H 1 = M 0 = L

Record the rating on the first page

NOTES and FIELD OBSERVATIONS:

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 | 0 |
| <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 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 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 | 1 |
| <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 type present: points = 0 | |
| <input 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"/> Lake Fringe wetland | 2 points | |
| <input type="checkbox"/> Freshwater tidal wetland | 2 points | |

H 1.3. Richness of plant species

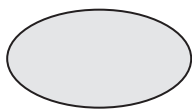
Count the number of plant species in the wetland that cover at least 10 ft².

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

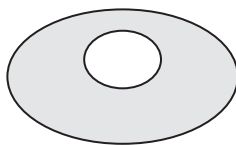
- | | | |
|------------------------------|------------|---|
| If you counted: > 19 species | points = 2 | 1 |
| 5 - 19 species | points = 1 | |
| < 5 species | points = 0 | |

H 1.4. Interspersion of habitats

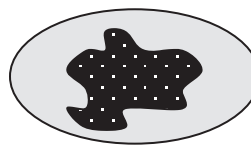
Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always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



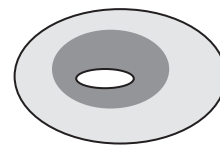
None = 0 points



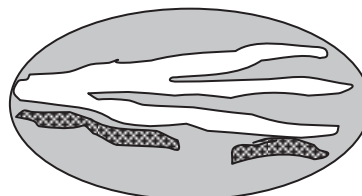
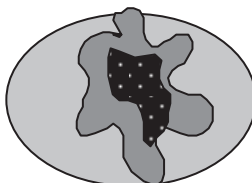
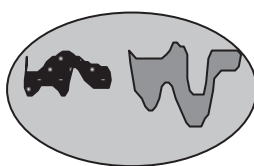
Low = 1 point



Moderate = 2 points



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



1

Wetland name or number A

<p>H 1.5. Special habitat features: Check the habitat features that are present in the wetland. <i>The number of checks is the number of points.</i> <input checked="" type="checkbox"/> Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long). <input checked="" type="checkbox"/> Standing snags (dbh > 4 in) within the wetland <input type="checkbox"/> Undercut banks are present for at least 6.6 ft (2 m) and/or overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m) <input type="checkbox"/> Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present (<i>cut shrubs or trees that have not yet weathered where wood is exposed</i>) <input type="checkbox"/> At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated (<i>structures for egg-laying by amphibians</i>) <input type="checkbox"/> Invasive plants cover less than 25% of the wetland area in every stratum of plants (<i>see H 1.1 for list of strata</i>)</p>		2
Total for H 1	Add the points in the boxes above	5

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 functions of the site?		
<p>H 2.1. Accessible habitat (include <i>only habitat that directly abuts wetland unit</i>). <i>Calculate:</i> 2 % undisturbed habitat <u> 4 </u> + [(% moderate and low intensity land uses)/2] <u> 2 </u> = <u> 5 </u> % If total accessible habitat is: > 1/3 (33.3%) of 1 km Polygon points = 3 20-33% of 1 km Polygon points = 2 10-19% of 1 km Polygon points = 1 < 10% of 1 km Polygon points = 0</p>		0
<p>H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. <i>Calculate:</i> 43 % undisturbed habitat <u> 4 </u> + [(% moderate and low intensity land uses)/2] <u> 2 </u> = <u> 47 </u> % 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</p>		1
<p>H 2.3. Land use intensity in 1 km Polygon: If > 50% of 1 km Polygon is high intensity land use points = (- 2) ≤ 50% of 1 km Polygon is high intensity points = 0</p>		-2
Total for H 2	Add the points in the boxes above	-1

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>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 next page) — It provides habitat for Threatened or Endangered species (any plant or animal on the state or federal lists) — It is mapped as a location for an individual WDFW priority 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 (listed on next page) within 100 m points = 1 Site does not meet any of the criteria above points = 0</p>		1

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.

Wetland name or number A

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type	Category
<i>Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.</i>	
<p>SC 1.0. Estuarine wetlands Does the wetland meet the following criteria for Estuarine wetlands? — The dominant water regime is tidal, — Vegetated, and — With a salinity greater than 0.5 ppt <input type="radio"/> Yes – Go to SC 1.1 <input checked="" type="radio"/> No = Not an estuarine wetland</p>	
<p>SC 1.1. Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? <input type="radio"/> Yes = Category I <input type="radio"/> No - Go to SC 1.2</p>	<input type="radio"/> Cat. I
<p>SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions? — 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) — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or unmowed grassland. — The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. <input type="radio"/> Yes = Category I <input checked="" type="radio"/> No = Category II</p>	<input type="radio"/> Cat. I <input type="radio"/> Cat. II
<p>SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? <input type="radio"/> Yes – Go to SC 2.2 <input checked="" type="radio"/> No – Go to SC 2.3 SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? <input type="radio"/> Yes = Category I <input checked="" type="radio"/> No = Not a WHCV SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwtlands.pdf <input type="radio"/> Yes – Contact WNHP/WDNR and go to SC 2.4 <input checked="" type="radio"/> No = Not a WHCV 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? <input type="radio"/> Yes = Category I <input checked="" type="radio"/> No = Not a WHCV</p>	<input type="radio"/> Cat. I
<p>SC 3.0. Bogs 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> 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? <input type="radio"/> Yes – Go to SC 3.3 <input checked="" type="radio"/> No – Go to SC 3.2 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? <input type="radio"/> Yes – Go to SC 3.3 <input checked="" type="radio"/> No = Is not a bog 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? <input type="radio"/> Yes = Is a Category I bog <input checked="" type="radio"/> No – Go to SC 3.4 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 4 are present, the wetland is a bog. SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy? <input type="radio"/> Yes = Is a Category I bog <input checked="" type="radio"/> No = Is not a bog</p>	<input type="radio"/> Cat. I

Wetland name or number A

<p>SC 4.0. Forested Wetlands</p> <p>Does the wetland have at least <u>1 contiguous acre</u> of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as priority habitats? <i>If you answer YES you will still need to rate the wetland based on its functions.</i></p> <ul style="list-style-type: none"> — Old-growth forests (west of Cascade crest): Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 in (81 cm) or more. — Mature forests (west of the Cascade Crest): Stands where the largest trees are 80- 200 years old OR the species that make up the canopy have an average diameter (dbh) exceeding 21 in (53 cm). <p style="text-align: right;"><input type="radio"/> Yes = Category I <input checked="" type="radio"/> No = Not a forested wetland for this section</p>	<input type="radio"/> Cat. I
<p>SC 5.0. Wetlands in Coastal Lagoons</p> <p>Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?</p> <ul style="list-style-type: none"> — 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 — The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon (<i>needs to be measured near the bottom</i>) <p style="text-align: center;"><input type="radio"/> Yes – Go to SC 5.1 <input checked="" type="radio"/> No = Not a wetland in a coastal lagoon</p> <p>SC 5.1. Does the wetland meet all of the following three conditions?</p> <ul style="list-style-type: none"> — 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). — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or unmowed grassland. — The wetland is larger than 1/10 ac (4350 ft²) <p style="text-align: right;"><input type="radio"/> Yes = Category I <input checked="" type="radio"/> No = Category II</p>	<input type="radio"/> Cat. I <input type="radio"/> Cat. II
<p>SC 6.0. Interdunal Wetlands</p> <p>Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? <i>If you answer yes you will still need to rate the wetland based on its habitat functions.</i></p> <p>In practical terms that means the following geographic areas:</p> <ul style="list-style-type: none"> — Long Beach Peninsula: Lands west of SR 103 — Grayland-Westport: Lands west of SR 105 — Ocean Shores-Copalis: Lands west of SR 115 and SR 109 <p style="text-align: center;"><input type="radio"/> Yes – Go to SC 6.1 <input checked="" type="radio"/> No = not an interdunal wetland for rating</p> <p>SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)?</p> <p style="text-align: right;"><input type="radio"/> Yes = Category I <input checked="" type="radio"/> No – Go to SC 6.2</p> <p>SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger?</p> <p style="text-align: right;"><input type="radio"/> Yes = Category II <input checked="" type="radio"/> No – Go to SC 6.3</p> <p>SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac?</p> <p style="text-align: right;"><input type="radio"/> Yes = Category III <input checked="" type="radio"/> No = Category IV</p>	<input type="radio"/> Cat. I <input type="radio"/> Cat. II <input type="radio"/> Cat. III <input type="radio"/> Cat. IV
<p>Category of wetland based on Special Characteristics</p> <p>If you answered No for all types, enter "Not Applicable" on Summary Form</p>	

Wetland name or number A

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- LEGEND:**
- Study Area
 - Extent of Observed Fill
 - Delineated Wetland
 - PFO/PSS
 - PSS



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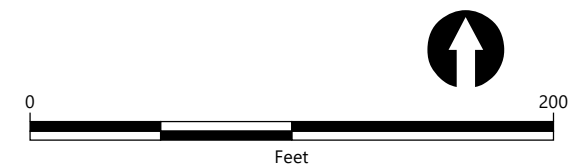


Figure 1
Wetland A Cowardin Classification Map
 Wetland Delineation and Critical Areas Report
 Marine Drive Proposed Development Project



LEGEND:

- Study Area
- Extent of Observed Fill
- Delineated Wetland
- Saturated Only
- Seasonally Flooded/Inundated



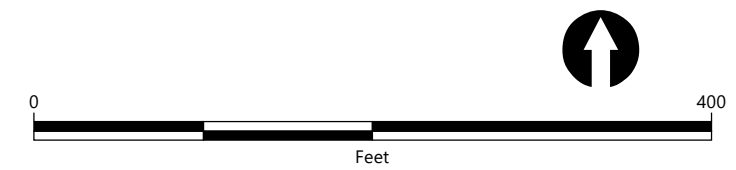
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Figure 2
Wetland A Hydroperiods Map
 Wetland Delineation and Critical Areas Report
 Marine Drive Proposed Development Project



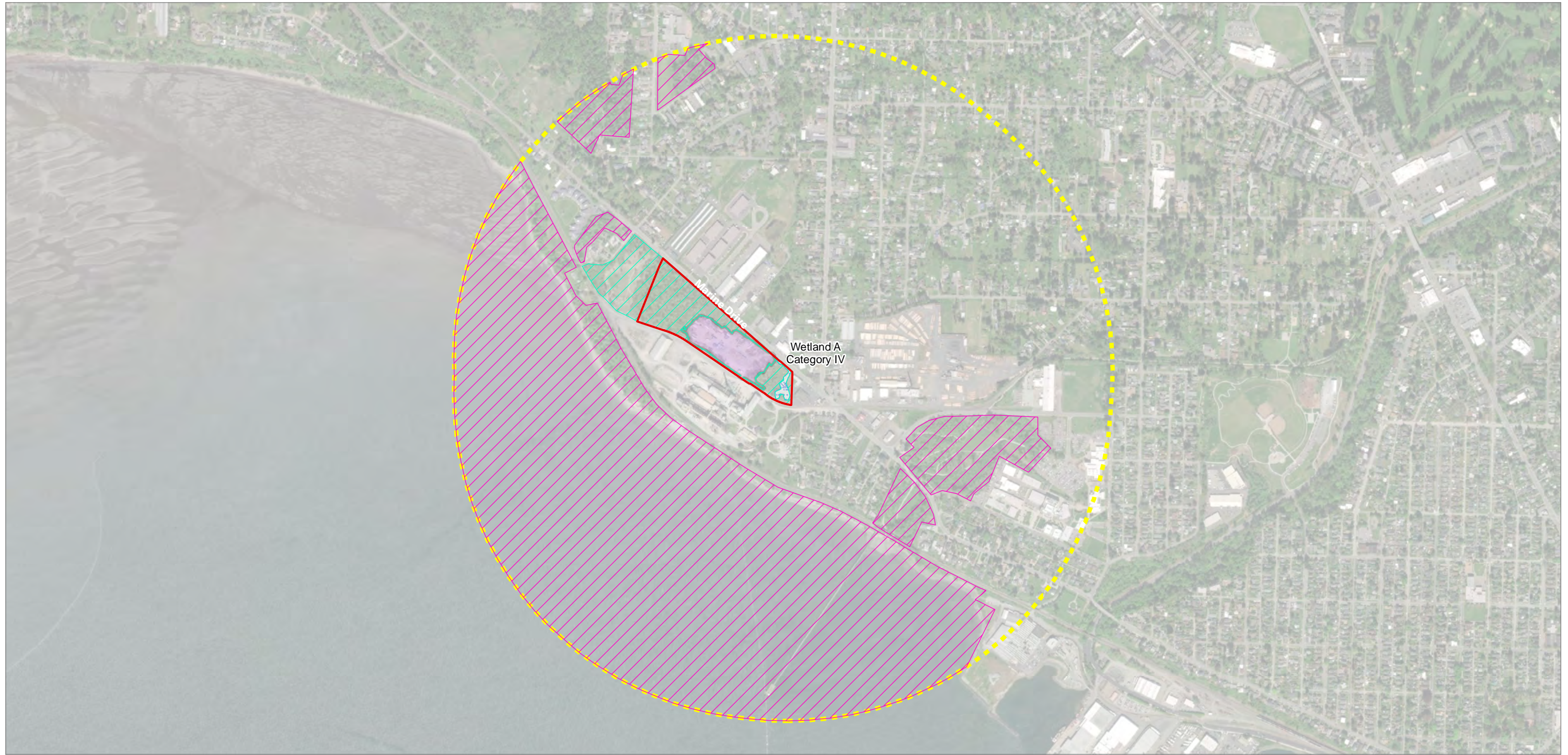
- LEGEND:**
- Study Area
 - Extent of Observed Fill
 - Delineated Wetland
 - 150-Foot Buffer



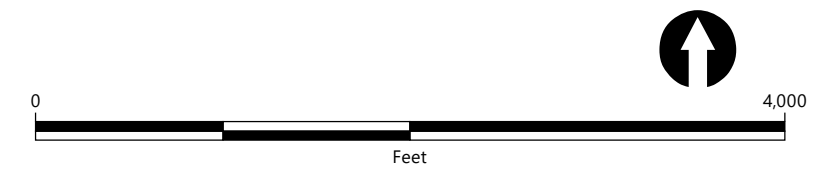
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Figure 3
Wetland A 150-Foot Buffer Map
 Wetland Delineation and Critical Areas Report
 Marine Drive Proposed Development Project



- LEGEND:**
- Study Area
 - Extent of Observed Fill
 - Delineated Wetland
 - Accessible Habitat
 - 1-Kilometer Polygon
 - Undisturbed Habitat



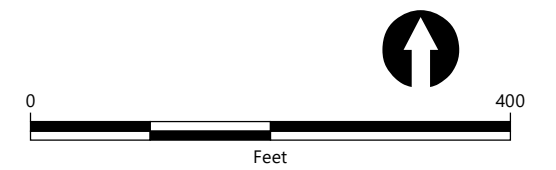
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Figure 4
Wetland A 1-Kilometer Polygon Map
 Wetland Delineation and Critical Areas Report
 Marine Drive Proposed Development Project



- LEGEND:**
- Study Area
 - Extent of Observed Fill
 - Contributing Basin
 - Delineated Wetland



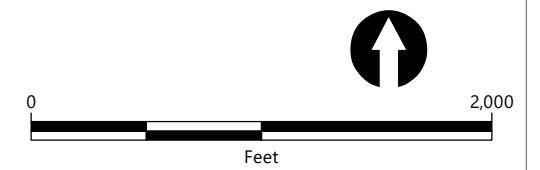
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Figure 5
Wetland A Contributing Basin Map
 Wetland Delineation and Critical Areas Report
 Marine Drive Proposed Development Project



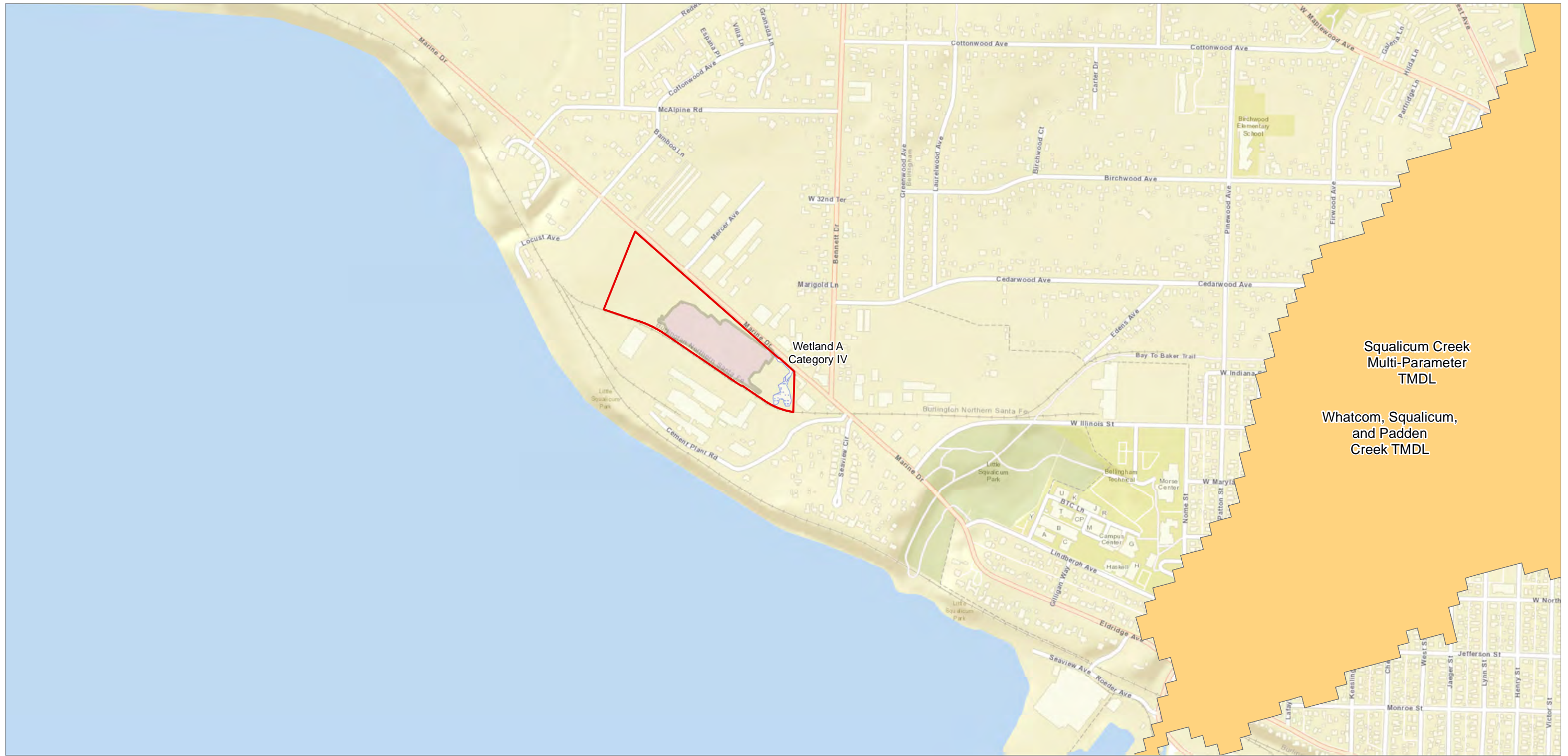
- LEGEND:**
- Study Area
 - Extent of Observed Fill
 - Delineated Wetland
 - 303(d) Listed Waters



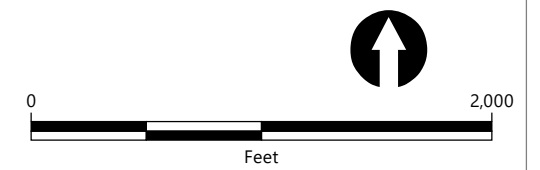
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Figure 6
Wetland A 303(d) Listed Waters Map
 Wetland Delineation and Critical Areas Report
 Marine Drive Proposed Development Project



- LEGEND:**
- Study Area
 - Extent of Observed Fill
 - Delineated Wetland
 - TMDLs in HUC12



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Figure 7
Wetland A TMDLs by Basin Map
 Wetland Delineation and Critical Areas Report
 Marine Drive Proposed Development Project

Wetland B Rating Forms

Wetland name or number B

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland B (Marine Drive, Whatcom Co.) Date of site visit: 10/20/2020
 Rated by Joseph R. Pursley Trained by Ecology? Yes No Date of training 06/2015
 HGM Class used for rating Depressional Wetland has multiple HGM classes? Y N

NOTE: Form is not complete without the figures requested (figures can be combined).
 Source of base aerial photo/map Google Earth

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

1. Category of wetland based on FUNCTIONS

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

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
<i>Circle the appropriate ratings</i>				
Site Potential	H <input type="checkbox"/> M <input checked="" type="checkbox"/> L	H <input type="checkbox"/> M <input checked="" type="checkbox"/> L	H <input type="checkbox"/> M <input checked="" type="checkbox"/> L	
Landscape Potential	<input checked="" type="checkbox"/> H M L	<input checked="" type="checkbox"/> H M L	H M <input checked="" type="checkbox"/> L	
Value	H M <input checked="" type="checkbox"/> L	H M <input checked="" type="checkbox"/> L	H <input checked="" type="checkbox"/> M L	TOTAL
Score Based on Ratings	6	6	5	17

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

2. Category based on SPECIAL CHARACTERISTICS of wetland

CHARACTERISTIC	CATEGORY
Estuarine	I II
Wetland of High Conservation Value	I
Bog	I
Mature Forest	I
Old Growth Forest	I
Coastal Lagoon	I II
Interdunal	I II III IV
None of the above	

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

Lake Fringe Wetlands

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

Slope Wetlands

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

HGM Classification of Wetlands in Western Washington

For questions 1-7, 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 1-7 apply, and go to Question 8.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Wetland name or number B

NO – go to 6

YES – The wetland class is **Riverine**

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

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

NO – go to 7

YES – The wetland class is **Depressional**

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

NO – go to 8

YES – The wetland class is **Depressional**

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

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

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

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

Wetland name or number B

DEPRESSIONAL AND FLATS WETLANDS		
Water Quality Functions - Indicators that the site functions to improve water quality		
D 1.0. Does the site have the potential to improve water quality?		
D 1.1. <u>Characteristics of surface water outflows from the wetland:</u> Wetland is a depression or flat depression (QUESTION 7 on key) with no surface water leaving it (no outlet). Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet. Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch.	points = 3 points = 2 points = 1 points = 1	3
D 1.2. <u>The soil 2 in below the surface (or duff layer) is true clay or true organic (use NRCS definitions).</u> Yes = 4 No = 0		0
D 1.3. <u>Characteristics and distribution of persistent plants (Emergent, Scrub-shrub, and/or Forested Cowardin classes):</u> Wetland has persistent, ungrazed, plants > 95% of area Wetland has persistent, ungrazed, plants > ½ of area Wetland has persistent, ungrazed plants > 1/10 of area Wetland has persistent, ungrazed plants < 1/10 of area	points = 5 points = 3 points = 1 points = 0	5
D 1.4. <u>Characteristics of seasonal ponding or inundation:</u> <i>This is the area that is ponded for at least 2 months. See description in manual.</i> Area seasonally ponded is > ½ total area of wetland Area seasonally ponded is > ¼ total area of wetland Area seasonally ponded is < ¼ total area of wetland	points = 4 points = 2 points = 0	0
Total for D 1 Add the points in the boxes above		8

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

D 2.0. Does the landscape have the potential to support the water quality function of the site?		
D 2.1. Does the wetland unit receive stormwater discharges?	Yes = 1 No = 0	1
D 2.2. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants?	Yes = 1 No = 0	1
D 2.3. Are there septic systems within 250 ft of the wetland?	Yes = 1 No = 0	0
D 2.4. Are there other sources of pollutants coming into the wetland that are not listed in questions D 2.1-D 2.3? Source <u>Homeless encampment</u> waste and debris.	Yes = 1 No = 0	1
Total for D 2 Add the points in the boxes above		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, lake, or marine water 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 an aquatic resource is on the 303(d) list?	Yes = 1 No = 0	0
D 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality (answer YES if there is a TMDL for the basin in which the unit is found)?	Yes = 2 No = 0	0
Total for D 3 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

DEPRESSIONAL AND FLATS WETLANDS

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

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

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

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

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

D 6.0. Are the hydrologic functions provided by the site valuable to society?		
D 6.1. The unit is in a landscape that has flooding problems. Choose the description that best matches conditions around the wetland unit being rated. Do not add points. Choose the highest score if more than one condition is met.		
The wetland captures surface water that would otherwise flow down-gradient into areas where flooding has damaged human or natural resources (e.g., houses or salmon redds):		0
• Flooding occurs in a sub-basin that is immediately down-gradient of unit.	points = 2	
• Surface flooding problems are in a sub-basin farther down-gradient.	points = 1	
Flooding from groundwater is an issue in the sub-basin.	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. Explain why <u>No evidence of outflow</u> was found.	points = 0	
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	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

Wetland name or number B

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
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, not Cowardin classes)	
Trees or shrubs $> \frac{2}{3}$ area of the wetland	points = 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

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
R 2.2. Does the contributing basin to the wetland include a UGA or incorporated area?	Yes = 1 No = 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
R 2.4. Is $> 10\%$ of the area within 150 ft of the wetland in land uses that generate pollutants?	Yes = 1 No = 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 Other sources _____	Yes = 1 No = 0
Total for R 2	Add the points in the boxes above

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
R 3.2. Is the wetland along a stream or river that has TMDL limits for nutrients, toxics, or pathogens?	Yes = 1 No = 0
R 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality? (<i>answer YES if there is a TMDL for the drainage in which the unit is found</i>)	Yes = 2 No = 0
Total for R 3	Add the points in the boxes above

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

Record the rating on the first page

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?	
<p>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></p> <p>If the ratio is more than 20 points = 9 If the ratio is 10-20 points = 6 If the ratio is 5-<10 points = 4 If the ratio is 1-<5 points = 2 If the ratio is < 1 points = 1</p>	
<p>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></p> <p>Forest or shrub for >¹/₃ area OR emergent plants > ²/₃ area points = 7 Forest or shrub for > ¹/₁₀ area OR emergent plants > ¹/₃ area points = 4 Plants do not meet above criteria points = 0</p>	
Total for R 4	Add the points in the boxes above

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	Add the points in the boxes above

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?	
<p>R 6.1. Distance to the nearest areas downstream that have flooding problems? <i>Choose the description that best fits the site.</i></p> <p>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) points = 2 Surface flooding problems are in a sub-basin farther down-gradient points = 1 No flooding problems anywhere downstream points = 0</p>	
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
Total for R 6	Add the points in the boxes above

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

Wetland name or number B

LAKE FRINGE WETLANDS

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

L 1.0. Does the site have the potential to improve water quality?	
L 1.1. Average width of plants along the lakeshore (use polygons of Cowardin classes):	
Plants are more than 33 ft (10 m) wide	points = 6
Plants are more than 16 ft (5 m) wide and <33 ft	points = 3
Plants are more than 6 ft (2 m) wide and <16 ft	points = 1
Plants are less than 6 ft wide	points = 0
L 1.2. Characteristics of the plants in the wetland: Choose the appropriate description that results in the highest points, and do not include any open water in your estimate of coverage. The herbaceous plants can be either the dominant form or as an understory in a shrub or forest community. These are not Cowardin classes. Area of cover is total cover in the unit, but it can be in patches. Herbaceous does not include aquatic bed.	
Cover of herbaceous plants is >90% of the vegetated area	points = 6
Cover of herbaceous plants is > ² / ₃ of the vegetated area	points = 4
Cover of herbaceous plants is > ¹ / ₃ of the vegetated area	points = 3
Other plants that are not aquatic bed > ² / ₃ unit	points = 3
Other plants that are not aquatic bed in > ¹ / ₃ vegetated area	points = 1
Aquatic bed plants and open water cover > ² / ₃ of the unit	points = 0
Total for L 1	Add the points in the boxes above

Rating of Site Potential If score is: 8-12 = H 4-7 = M 0-3 = L Record the rating on the first page

L 2.0. Does the landscape have the potential to support the water quality function of the site?	
L 2.1. Is the lake used by power boats?	Yes = 1 No = 0
L 2.2. Is > 10% of the area within 150 ft of wetland unit on the upland side in land uses that generate pollutants?	Yes = 1 No = 0
L 2.3. Does the lake have problems with algal blooms or excessive plant growth such as milfoil?	Yes = 1 No = 0
Total for L 2	Add the points in the boxes above

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

L 3.0. Is the water quality improvement provided by the site valuable to society?	
L 3.1. Is the lake on the 303(d) list of degraded aquatic resources?	Yes = 1 No = 0
L 3.2. Is the lake in a sub-basin where water quality is an issue (at least one aquatic resource in the basin is on the 303(d) list)?	Yes = 1 No = 0
L 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 lake or basin in which the unit is found.	Yes = 2 No = 0
Total for L 3	Add the points in the boxes above

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

Wetland name or number B

LAKE FRINGE WETLANDS

Hydrologic Functions - Indicators that the wetland unit functions to reduce shoreline erosion

L 4.0. Does the site have the potential to reduce shoreline erosion?		
L 4.1. Distance along shore and average width of Cowardin classes along the lakeshore (do not include Aquatic bed): <i>Choose the highest scoring description that matches conditions in the wetland.</i>		
> ¾ of distance is Scrub-shrub or Forested at least 33 ft (10 m) wide	points = 6	
> ¾ of distance is Scrub-shrub or Forested at least 6 ft (2 m) wide	points = 4	
> ¼ distance is Scrub-shrub or Forested at least 33 ft (10 m) wide	points = 4	
Plants are at least 6 ft (2 m) wide (any type except Aquatic bed)	points = 2	
Plants are less than 6 ft (2 m) wide (any type except Aquatic bed)	points = 0	

Rating of Site Potential: If score is: 6 = M 0-5 = L

Record the rating on the first page

L 5.0. Does the landscape have the potential to support the hydrologic functions of the site?		
L 5.1. Is the lake used by power boats with more than 10 hp?	Yes = 1 No = 0	
L 5.2. Is the fetch on the lake side of the unit at least 1 mile in distance?	Yes = 1 No = 0	
Total for L 5	Add the points in the boxes above	

Rating of Landscape Potential If score is: 2 = H 1 = M 0 = L

Record the rating on the first page

L 6.0. Are the hydrologic functions provided by the site valuable to society?		
L 6.1. Are there resources along the shore that can be impacted by erosion? If more than one resource is present, choose the one with the highest score.		
There are human structures or old growth/mature forests within 25 ft of OHWM of the shore in the unit	points = 2	
There are nature trails or other paths and recreational activities within 25 ft of OHWM	points = 1	
Other resources that could be impacted by erosion	points = 1	
There are no resources that can be impacted by erosion along the shores of the unit	points = 0	

Rating of Value: If score is: 2 = H 1 = M 0 = L

Record the rating on the first page

NOTES and FIELD OBSERVATIONS:

SLOPE WETLANDS

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

S 1.0. Does the site have the potential to improve water quality?		
S 1.1. Characteristics of the average slope of the wetland: <i>(a 1% slope has a 1 ft vertical drop in elevation for every 100 ft of horizontal distance)</i>		
Slope is 1% or less		points = 3
Slope is > 1%-2%		points = 2
Slope is > 2%-5%		points = 1
Slope is greater than 5%		points = 0
S 1.2. <u>The soil 2 in below the surface (or duff layer)</u> is true clay or true organic <i>(use NRCS definitions)</i> : Yes = 3 No = 0		
S 1.3. Characteristics of the plants in the wetland that trap sediments and pollutants: Choose the points appropriate for the description that best fits the plants in the wetland. <i>Dense means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 in.</i>		
Dense, uncut, herbaceous plants > 90% of the wetland area		points = 6
Dense, uncut, herbaceous plants > ½ of area		points = 3
Dense, woody, plants > ½ of area		points = 2
Dense, uncut, herbaceous plants > ¼ of area		points = 1
Does not meet any of the criteria above for plants		points = 0
Total for S 1	Add the points in the boxes above	

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

S 2.0. Does the landscape have the potential to support the water quality function of the site?		
S 2.1. Is > 10% of the area within 150 ft on the uphill side of the wetland in land uses that generate pollutants?		
		Yes = 1 No = 0
S 2.2. Are there other sources of pollutants coming into the wetland that are not listed in question S 2.1? Other sources _____		
		Yes = 1 No = 0
Total for S 2	Add the points in the boxes above	

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

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

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

Wetland name or number B

SLOPE WETLANDS

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

S 4.0. Does the site have the potential to reduce flooding and stream erosion?

S 4.1. Characteristics of plants that reduce the velocity of surface flows during storms: Choose the points appropriate for the description that best fits conditions in the wetland. <i>Stems of plants should be thick enough (usually > 1/8 in), or dense enough, to remain erect during surface flows.</i>	
Dense, uncut, rigid plants cover > 90% of the area of the wetland	points = 1
All other conditions	points = 0

Rating of Site Potential If score is: 1 = M 0 = L

Record the rating on the first page

S 5.0. Does the landscape have the potential to support the hydrologic functions of the site?

S 5.1. Is more than 25% of the area within 150 ft upslope of wetland in land uses or cover that generate excess surface runoff?	Yes = 1 No = 0
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Rating of Landscape Potential If score is: 1 = M 0 = L

Record the rating on the first page

S 6.0. Are the hydrologic functions provided by the site valuable to society?

S 6.1. Distance to the nearest areas downstream that have flooding problems: The sub-basin immediately down-gradient of site has flooding problems that result in damage to human or natural resources (e.g., houses or salmon redds)	points = 2
Surface flooding problems are in a sub-basin farther down-gradient	points = 1
No flooding problems anywhere downstream	points = 0

S 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 S 6	Add the points in the boxes above
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Rating of Value If score is: 2-4 = H 1 = M 0 = L

Record the rating on the first page

NOTES and FIELD OBSERVATIONS:

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 | 1 |
| <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 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 | 1 |
| <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 type present: points = 0 | |
| <input 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"/> Lake Fringe wetland | 2 points | |
| <input type="checkbox"/> Freshwater tidal wetland | 2 points | |

H 1.3. Richness of plant species

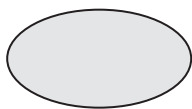
Count the number of plant species in the wetland that cover at least 10 ft².

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

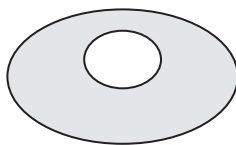
- | | | |
|------------------------------|------------|---|
| If you counted: > 19 species | points = 2 | 1 |
| 5 - 19 species | points = 1 | |
| < 5 species | points = 0 | |

H 1.4. Interspersion of habitats

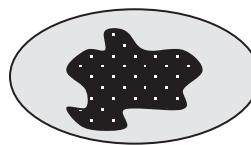
Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always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



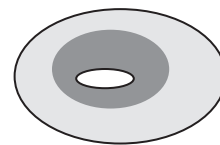
None = 0 points



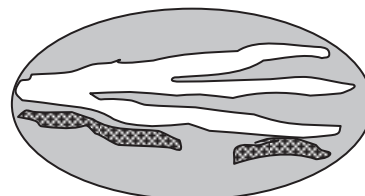
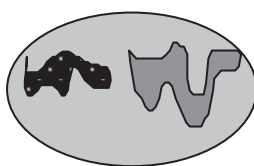
Low = 1 point



Moderate = 2 points



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



2

Wetland name or number B

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

<p>H 2.0. Does the landscape have the potential to support the habitat functions of the site?</p>		
<p>H 2.1. Accessible habitat (include <i>only habitat that directly abuts wetland unit</i>). <i>Calculate:</i> 2 % undisturbed habitat <u> 2 </u> + [(% moderate and low intensity land uses)/2] <u> 1 </u> = <u> 3 </u> % If total accessible habitat is: > 1/3 (33.3%) of 1 km Polygon points = 3 20-33% of 1 km Polygon points = 2 10-19% of 1 km Polygon points = 1 < 10% of 1 km Polygon points = 0</p>		0
<p>H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. <i>Calculate:</i> 48 % undisturbed habitat <u> 2 </u> + [(% moderate and low intensity land uses)/2] <u> 1 </u> = <u> 49 </u> % 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</p>		1
<p>H 2.3. Land use intensity in 1 km Polygon: If > 50% of 1 km Polygon is high intensity land use points = (- 2) ≤ 50% of 1 km Polygon is high intensity points = 0</p>		-2
Total for H 2	Add the points in the boxes above	-1

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

<p>H 3.0. Is the habitat provided by the site valuable to society?</p>		
<p>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 next page) — It provides habitat for Threatened or Endangered species (any plant or animal on the state or federal lists) — It is mapped as a location for an individual WDFW priority 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 (listed on next page) within 100 m points = 1 Site does not meet any of the criteria above points = 0</p>		1

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. Circle the category when the appropriate criteria are met.</i>	
<p>SC 1.0. Estuarine wetlands Does the wetland meet the following criteria for Estuarine wetlands? — The dominant water regime is tidal, — Vegetated, and — With a salinity greater than 0.5 ppt <input type="radio"/> Yes – Go to SC 1.1 <input checked="" type="radio"/> No = Not an estuarine wetland</p>	
<p>SC 1.1. Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? <input type="radio"/> Yes = Category I <input type="radio"/> No - Go to SC 1.2</p>	<input type="radio"/> Cat. I
<p>SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions? — 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) — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or unmowed grassland. — The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. <input type="radio"/> Yes = Category I <input checked="" type="radio"/> No = Category II</p>	<input type="radio"/> Cat. I <input type="radio"/> Cat. II
<p>SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? <input type="radio"/> Yes – Go to SC 2.2 <input checked="" type="radio"/> No – Go to SC 2.3 SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? <input type="radio"/> Yes = Category I <input checked="" type="radio"/> No = Not a WHCV SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf <input type="radio"/> Yes – Contact WNHP/WDNR and go to SC 2.4 <input checked="" type="radio"/> No = Not a WHCV 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? <input type="radio"/> Yes = Category I <input checked="" type="radio"/> No = Not a WHCV</p>	<input type="radio"/> Cat. I
<p>SC 3.0. Bogs 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> 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? <input type="radio"/> Yes – Go to SC 3.3 <input checked="" type="radio"/> No – Go to SC 3.2 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? <input type="radio"/> Yes – Go to SC 3.3 <input checked="" type="radio"/> No = Is not a bog 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? <input type="radio"/> Yes = Is a Category I bog <input checked="" type="radio"/> No – Go to SC 3.4 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 4 are present, the wetland is a bog. SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy? <input type="radio"/> Yes = Is a Category I bog <input checked="" type="radio"/> No = Is not a bog</p>	<input type="radio"/> Cat. I

<p>SC 4.0. Forested Wetlands</p> <p>Does the wetland have at least <u>1 contiguous acre</u> of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as priority habitats? <i>If you answer YES you will still need to rate the wetland based on its functions.</i></p> <ul style="list-style-type: none"> — Old-growth forests (west of Cascade crest): Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 in (81 cm) or more. — Mature forests (west of the Cascade Crest): Stands where the largest trees are 80- 200 years old OR the species that make up the canopy have an average diameter (dbh) exceeding 21 in (53 cm). <p style="text-align: right;"> <input type="radio"/> Yes = Category I <input checked="" type="radio"/> No = Not a forested wetland for this section </p>	<input type="radio"/> Cat. I
<p>SC 5.0. Wetlands in Coastal Lagoons</p> <p>Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?</p> <ul style="list-style-type: none"> — 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 — The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon (<i>needs to be measured near the bottom</i>) <p style="text-align: center;"> <input type="radio"/> Yes – Go to SC 5.1 <input checked="" type="radio"/> No = Not a wetland in a coastal lagoon </p> <p>SC 5.1. Does the wetland meet all of the following three conditions?</p> <ul style="list-style-type: none"> — 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). — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or unmowed grassland. — The wetland is larger than 1/10 ac (4350 ft²) <p style="text-align: right;"> <input type="radio"/> Yes = Category I <input checked="" type="radio"/> No = Category II </p>	<input type="radio"/> Cat. I <input type="radio"/> Cat. II
<p>SC 6.0. Interdunal Wetlands</p> <p>Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? <i>If you answer yes you will still need to rate the wetland based on its habitat functions.</i></p> <p>In practical terms that means the following geographic areas:</p> <ul style="list-style-type: none"> — Long Beach Peninsula: Lands west of SR 103 — Grayland-Westport: Lands west of SR 105 — Ocean Shores-Copalis: Lands west of SR 115 and SR 109 <p style="text-align: right;"> <input type="radio"/> Yes – Go to SC 6.1 <input checked="" type="radio"/> No = not an interdunal wetland for rating </p> <p>SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)?</p> <p style="text-align: right;"> <input type="radio"/> Yes = Category I <input checked="" type="radio"/> No – Go to SC 6.2 </p> <p>SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger?</p> <p style="text-align: right;"> <input type="radio"/> Yes = Category II <input checked="" type="radio"/> No – Go to SC 6.3 </p> <p>SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac?</p> <p style="text-align: right;"> <input type="radio"/> Yes = Category III <input checked="" type="radio"/> No = Category IV </p>	<input type="radio"/> Cat. I <input type="radio"/> Cat. II <input type="radio"/> Cat. III <input type="radio"/> Cat. IV
<p>Category of wetland based on Special Characteristics</p> <p>If you answered No for all types, enter "Not Applicable" on Summary Form</p>	

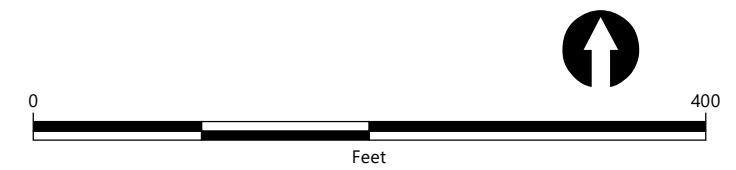
Wetland name or number B

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LEGEND:

- Study Area
- Extent of Observed Fill
- Delineated Wetland
- PFO/PSS
- PSS



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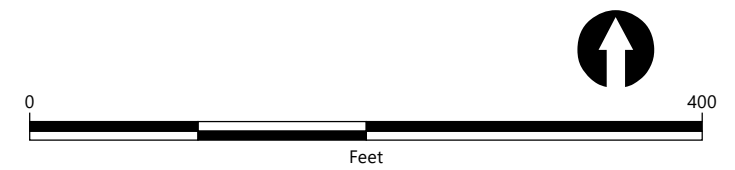


Figure 1
Wetland B Cowardin Classification Map
 Wetland Delineation and Critical Areas Report
 Marine Drive Proposed Development Project



LEGEND:

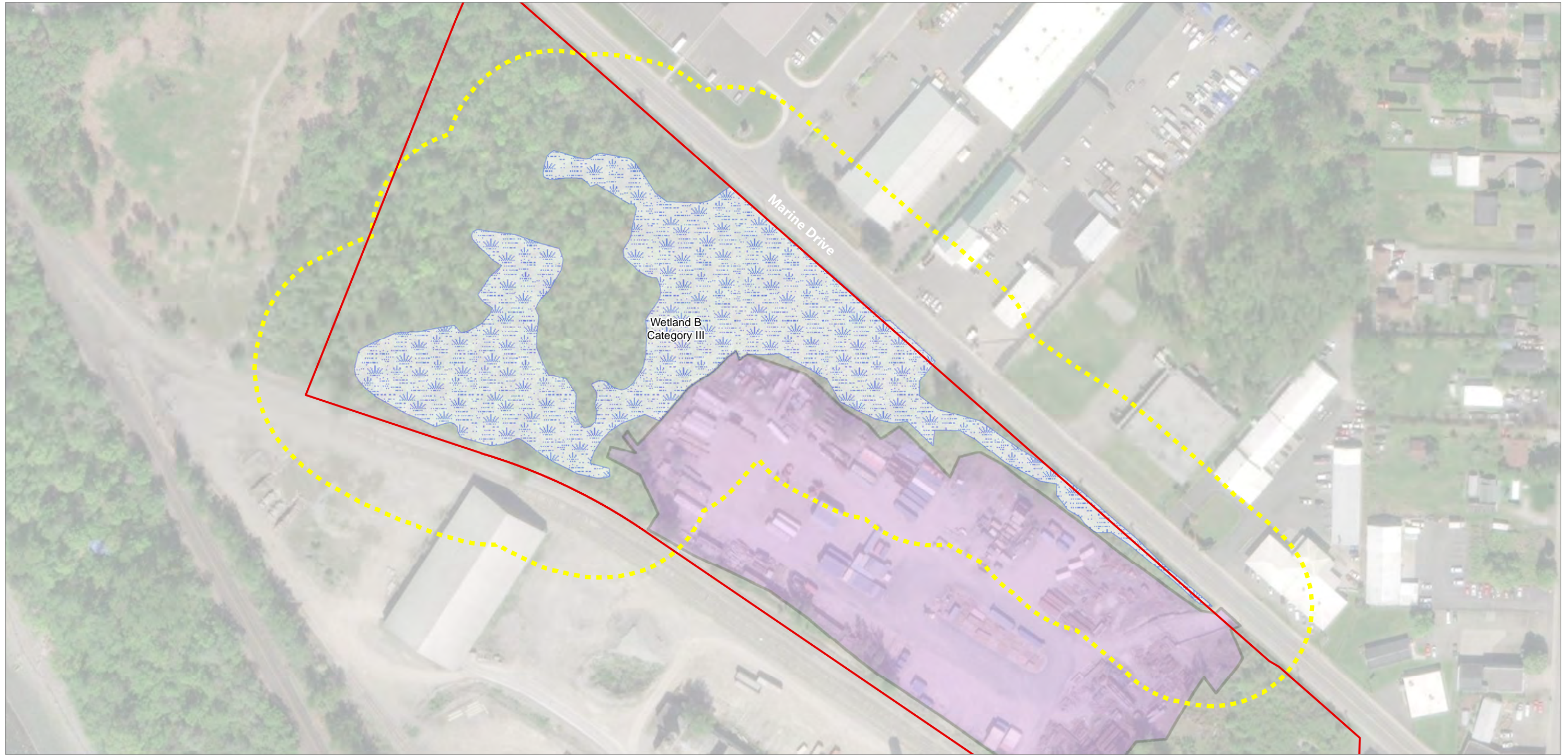
- Study Area
- Extent of Observed Fill
- Delineated Wetland
- Saturated Only
- Seasonally Flooded/Inundated



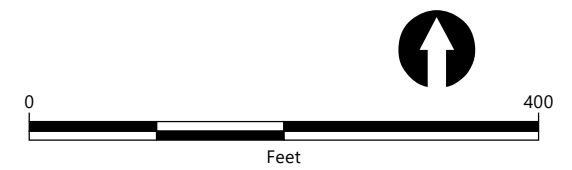
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Figure 2
Wetland B Hydroperiods Map
 Wetland Delineation and Critical Areas Report
 Marine Drive Proposed Development Project



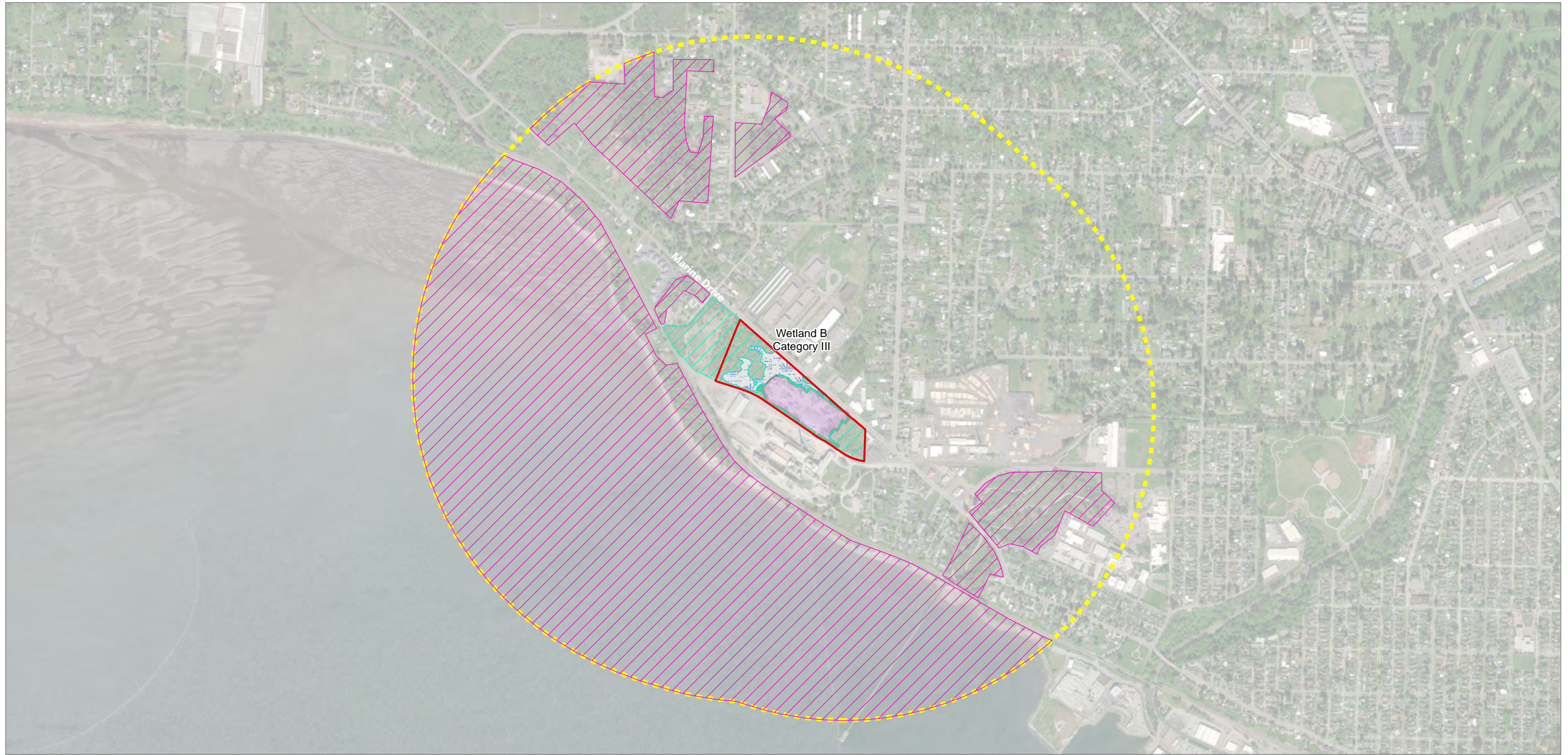
- LEGEND:**
- Study Area
 - Extent of Observed Fill
 - Delineated Wetland
 - 150-Foot Buffer



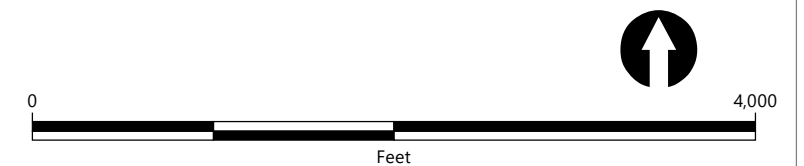
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Figure 3
Wetland B 150-Foot Buffer Map
 Wetland Delineation and Critical Areas Report
 Marine Drive Proposed Development Project



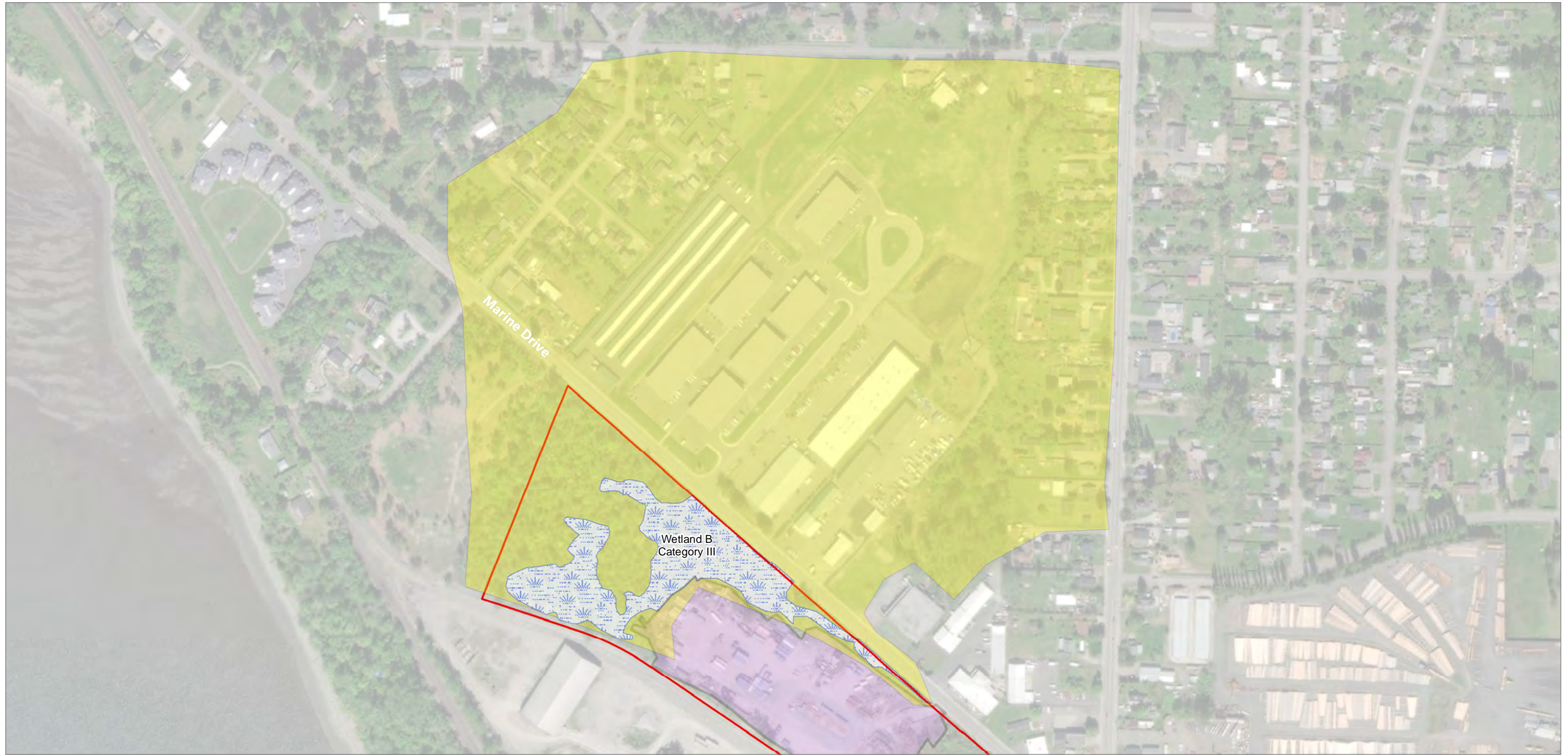
- LEGEND:**
- Study Area
 - 1-Kilometer Polygon
 - Extent of Observed Fill
 - Delineated Wetland
 - Undisturbed Habitat
 - Accessible Habitat



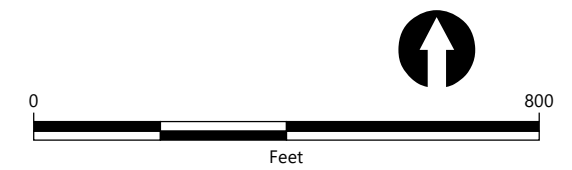
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Figure 4
Wetland B 1-Kilometer Polygon Map
 Wetland Delineation and Critical Areas Report
 Marine Drive Proposed Development Project



- LEGEND:**
- Study Area
 - Extent of Observed Fill
 - Contributing Basin
 - Delineated Wetland



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LEGEND:

Study Area	Extent of Observed Fill
Delineated Wetland	303(d) Listed Waters

0 2,000
Feet

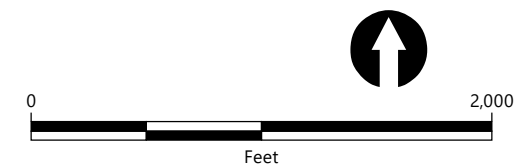
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Figure 6
Wetland B 303(d) Listed Waters Map
 Wetland Delineation and Critical Areas Report
 Marine Drive Proposed Development Project



- LEGEND:**
- Study Area
 - Extent of Observed Fill
 - Delineated Wetland
 - TMDLs in HUC12



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Figure 7
Wetland B TMDLs by Basin Map
 Wetland Delineation and Critical Areas Report
 Marine Drive Proposed Development Project

Wetland C Rating Forms

Wetland name or number C

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland C (Marine Drive, Lehigh Cement) Date of site visit: 10/20/2020
 Rated by Joseph R. Pursley Trained by Ecology? Yes No Date of training 06/2015
 HGM Class used for rating Depressional Wetland has multiple HGM classes? Y N

NOTE: Form is not complete without the figures requested (figures can be combined).
 Source of base aerial photo/map Google Earth

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

1. Category of wetland based on FUNCTIONS

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

FUNCTION	Improving Water Quality			Hydrologic			Habitat			
<i>Circle the appropriate ratings</i>										
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	TOTAL
Score Based on Ratings	6			6			4			16

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

2. Category based on SPECIAL CHARACTERISTICS of wetland

CHARACTERISTIC	CATEGORY
Estuarine	I II
Wetland of High Conservation Value	I
Bog	I
Mature Forest	I
Old Growth Forest	I
Coastal Lagoon	I II
Interdunal	I II III IV
None of the above	

Wetland name or number C

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

Lake Fringe Wetlands

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

Slope Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Plant cover of dense trees, shrubs, and herbaceous plants	S 1.3	
Plant cover of dense, rigid trees, shrubs, and herbaceous plants (<i>can be added to figure above</i>)	S 4.1	
Boundary of 150 ft buffer (<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	

Wetland name or number C

NO – go to 6

YES – The wetland class is **Riverine**

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

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

NO – go to 7

YES – The wetland class is **Depressional**

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

NO – go to 8

YES – The wetland class is **Depressional**

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

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

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

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

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

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

D 2.0. Does the landscape have the potential to support the water quality function of the site?		
D 2.1. Does the wetland unit receive stormwater discharges?	Yes = 1 No = 0	1
D 2.2. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants?	Yes = 1 No = 0	1
D 2.3. Are there septic systems within 250 ft of the wetland?	Yes = 1 No = 0	0
D 2.4. Are there other sources of pollutants coming into the wetland that are not listed in questions D 2.1-D 2.3? Source <u>Active and historic</u> homeless encampments (human waste and garbage)	Yes = 1 No = 0	1
Total for D 2 Add the points in the boxes above		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, lake, or marine water 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 an aquatic resource is on the 303(d) list?	Yes = 1 No = 0	0
D 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality (answer YES if there is a TMDL for the basin in which the unit is found)?	Yes = 2 No = 0	0
Total for D 3 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

DEPRESSIONAL AND FLATS WETLANDS

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

D 4.0. Does the site have the potential to reduce flooding and erosion?		
D 4.1. Characteristics of surface water outflows from the wetland:		
Wetland is a depression or flat depression with no surface water leaving it (no outlet)	points = 4	4
Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet	points = 2	
Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch	points = 1	
Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing	points = 0	
D 4.2. Depth of storage during wet periods: Estimate the height of ponding above the bottom of the outlet. For wetlands with no outlet, measure from the surface of permanent water or if dry, the deepest part.		
Marks of ponding are 3 ft or more above the surface or bottom of outlet	points = 7	3
Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet	points = 5	
Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet	points = 3	
The wetland is a "headwater" wetland	points = 3	
Wetland is flat but has small depressions on the surface that trap water	points = 1	
Marks of ponding less than 0.5 ft (6 in)	points = 0	
D 4.3. Contribution of the wetland to storage in the watershed: Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.		
The area of the basin is less than 10 times the area of the unit	points = 5	5
The area of the basin is 10 to 100 times the area of the unit	points = 3	
The area of the basin is more than 100 times the area of the unit	points = 0	
Entire wetland is in the Flats class	points = 5	
Total for D 4	Add the points in the boxes above	12

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

D 5.0. Does the landscape have the potential to support hydrologic 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 generate excess runoff?	Yes = 1 No = 0	1
D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses (residential at >1 residence/ac, urban, commercial, agriculture, etc.)?	Yes = 1 No = 0	0
Total for D 5	Add the points in the boxes above	2

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

D 6.0. Are the hydrologic functions provided by the site valuable to society?		
D 6.1. The unit is in a landscape that has flooding problems. Choose the description that best matches conditions around the wetland unit being rated. Do not add points. Choose the highest score if more than one condition is met.		
The wetland captures surface water that would otherwise flow down-gradient into areas where flooding has damaged human or natural resources (e.g., houses or salmon redds):		0
• Flooding occurs in a sub-basin that is immediately down-gradient of unit.	points = 2	
• Surface flooding problems are in a sub-basin farther down-gradient.	points = 1	
Flooding from groundwater is an issue in the sub-basin.	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. Explain why <u>Wetland is a closed depression.</u>	points = 0	
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	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

Wetland name or number C

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
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, not Cowardin classes)	
Trees or shrubs $> \frac{2}{3}$ area of the wetland	points = 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

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
R 2.2. Does the contributing basin to the wetland include a UGA or incorporated area?	Yes = 1 No = 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
R 2.4. Is $> 10\%$ of the area within 150 ft of the wetland in land uses that generate pollutants?	Yes = 1 No = 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 Other sources _____	Yes = 1 No = 0
Total for R 2	Add the points in the boxes above

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
R 3.2. Is the wetland along a stream or river that has TMDL limits for nutrients, toxics, or pathogens?	Yes = 1 No = 0
R 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality? (<i>answer YES if there is a TMDL for the drainage in which the unit is found</i>)	Yes = 2 No = 0
Total for R 3	Add the points in the boxes above

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

Record the rating on the first page

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?	
<p>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></p> <p>If the ratio is more than 20 points = 9 If the ratio is 10-20 points = 6 If the ratio is 5-<10 points = 4 If the ratio is 1-<5 points = 2 If the ratio is < 1 points = 1</p>	
<p>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 <u>NOT</u> Cowardin classes).</i></p> <p>Forest or shrub for >¹/₃ area OR emergent plants > ²/₃ area points = 7 Forest or shrub for > ¹/₁₀ area OR emergent plants > ¹/₃ area points = 4 Plants do not meet above criteria points = 0</p>	
Total for R 4	Add the points in the boxes above

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	Add the points in the boxes above

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?	
<p>R 6.1. Distance to the nearest areas downstream that have flooding problems? <i>Choose the description that best fits the site.</i></p> <p>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) points = 2 Surface flooding problems are in a sub-basin farther down-gradient points = 1 No flooding problems anywhere downstream points = 0</p>	
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
Total for R 6	Add the points in the boxes above

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

Wetland name or number C

LAKE FRINGE WETLANDS

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

L 1.0. Does the site have the potential to improve water quality?	
L 1.1. Average width of plants along the lakeshore (use polygons of Cowardin classes):	
Plants are more than 33 ft (10 m) wide	points = 6
Plants are more than 16 ft (5 m) wide and <33 ft	points = 3
Plants are more than 6 ft (2 m) wide and <16 ft	points = 1
Plants are less than 6 ft wide	points = 0
L 1.2. Characteristics of the plants in the wetland: Choose the appropriate description that results in the highest points, and do not include any open water in your estimate of coverage. The herbaceous plants can be either the dominant form or as an understory in a shrub or forest community. These are not Cowardin classes. Area of cover is total cover in the unit, but it can be in patches. Herbaceous does not include aquatic bed.	
Cover of herbaceous plants is >90% of the vegetated area	points = 6
Cover of herbaceous plants is $>^{2/3}$ of the vegetated area	points = 4
Cover of herbaceous plants is $>^{1/3}$ of the vegetated area	points = 3
Other plants that are not aquatic bed $>^{2/3}$ unit	points = 3
Other plants that are not aquatic bed in $>^{1/3}$ vegetated area	points = 1
Aquatic bed plants and open water cover $>^{2/3}$ of the unit	points = 0
Total for L 1	Add the points in the boxes above

Rating of Site Potential If score is: 8-12 = H 4-7 = M 0-3 = L Record the rating on the first page

L 2.0. Does the landscape have the potential to support the water quality function of the site?	
L 2.1. Is the lake used by power boats?	Yes = 1 No = 0
L 2.2. Is > 10% of the area within 150 ft of wetland unit on the upland side in land uses that generate pollutants?	Yes = 1 No = 0
L 2.3. Does the lake have problems with algal blooms or excessive plant growth such as milfoil?	Yes = 1 No = 0
Total for L 2	Add the points in the boxes above

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

L 3.0. Is the water quality improvement provided by the site valuable to society?	
L 3.1. Is the lake on the 303(d) list of degraded aquatic resources?	Yes = 1 No = 0
L 3.2. Is the lake in a sub-basin where water quality is an issue (at least one aquatic resource in the basin is on the 303(d) list)?	Yes = 1 No = 0
L 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 lake or basin in which the unit is found.	Yes = 2 No = 0
Total for L 3	Add the points in the boxes above

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

Wetland name or number C

LAKE FRINGE WETLANDS

Hydrologic Functions - Indicators that the wetland unit functions to reduce shoreline erosion

L 4.0. Does the site have the potential to reduce shoreline erosion?		
L 4.1. Distance along shore and average width of Cowardin classes along the lakeshore (do not include Aquatic bed): <i>Choose the highest scoring description that matches conditions in the wetland.</i>		
> ¾ of distance is Scrub-shrub or Forested at least 33 ft (10 m) wide	points = 6	
> ¾ of distance is Scrub-shrub or Forested at least 6 ft (2 m) wide	points = 4	
> ¼ distance is Scrub-shrub or Forested at least 33 ft (10 m) wide	points = 4	
Plants are at least 6 ft (2 m) wide (any type except Aquatic bed)	points = 2	
Plants are less than 6 ft (2 m) wide (any type except Aquatic bed)	points = 0	

Rating of Site Potential: If score is: 6 = M 0-5 = L

Record the rating on the first page

L 5.0. Does the landscape have the potential to support the hydrologic functions of the site?		
L 5.1. Is the lake used by power boats with more than 10 hp?	Yes = 1 No = 0	
L 5.2. Is the fetch on the lake side of the unit at least 1 mile in distance?	Yes = 1 No = 0	
Total for L 5	Add the points in the boxes above	

Rating of Landscape Potential If score is: 2 = H 1 = M 0 = L

Record the rating on the first page

L 6.0. Are the hydrologic functions provided by the site valuable to society?		
L 6.1. Are there resources along the shore that can be impacted by erosion? If more than one resource is present, choose the one with the highest score.		
There are human structures or old growth/mature forests within 25 ft of OHWM of the shore in the unit	points = 2	
There are nature trails or other paths and recreational activities within 25 ft of OHWM	points = 1	
Other resources that could be impacted by erosion	points = 1	
There are no resources that can be impacted by erosion along the shores of the unit	points = 0	

Rating of Value: If score is: 2 = H 1 = M 0 = L

Record the rating on the first page

NOTES and FIELD OBSERVATIONS:

SLOPE WETLANDS

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

S 1.0. Does the site have the potential to improve water quality?		
S 1.1. Characteristics of the average slope of the wetland: <i>(a 1% slope has a 1 ft vertical drop in elevation for every 100 ft of horizontal distance)</i>		
Slope is 1% or less		points = 3
Slope is > 1%-2%		points = 2
Slope is > 2%-5%		points = 1
Slope is greater than 5%		points = 0
S 1.2. <u>The soil 2 in below the surface (or duff layer)</u> is true clay or true organic <i>(use NRCS definitions)</i> : Yes = 3 No = 0		
S 1.3. Characteristics of the plants in the wetland that trap sediments and pollutants: Choose the points appropriate for the description that best fits the plants in the wetland. <i>Dense means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 in.</i>		
Dense, uncut, herbaceous plants > 90% of the wetland area		points = 6
Dense, uncut, herbaceous plants > ½ of area		points = 3
Dense, woody, plants > ½ of area		points = 2
Dense, uncut, herbaceous plants > ¼ of area		points = 1
Does not meet any of the criteria above for plants		points = 0
Total for S 1	Add the points in the boxes above	

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

S 2.0. Does the landscape have the potential to support the water quality function of the site?		
S 2.1. Is > 10% of the area within 150 ft on the uphill side of the wetland in land uses that generate pollutants?		
		Yes = 1 No = 0
S 2.2. Are there other sources of pollutants coming into the wetland that are not listed in question S 2.1? Other sources _____		
		Yes = 1 No = 0
Total for S 2	Add the points in the boxes above	

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

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

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

Wetland name or number C

SLOPE WETLANDS

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

S 4.0. Does the site have the potential to reduce flooding and stream erosion?

S 4.1. Characteristics of plants that reduce the velocity of surface flows during storms: Choose the points appropriate for the description that best fits conditions in the wetland. <i>Stems of plants should be thick enough (usually > 1/8 in), or dense enough, to remain erect during surface flows.</i>	
Dense, uncut, rigid plants cover > 90% of the area of the wetland	points = 1
All other conditions	points = 0

Rating of Site Potential If score is: 1 = M 0 = L

Record the rating on the first page

S 5.0. Does the landscape have the potential to support the hydrologic functions of the site?

S 5.1. Is more than 25% of the area within 150 ft upslope of wetland in land uses or cover that generate excess surface runoff?	Yes = 1 No = 0
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Rating of Landscape Potential If score is: 1 = M 0 = L

Record the rating on the first page

S 6.0. Are the hydrologic functions provided by the site valuable to society?

S 6.1. Distance to the nearest areas downstream that have flooding problems:	
The sub-basin immediately down-gradient of site has flooding problems that result in damage to human or natural resources (e.g., houses or salmon redds)	points = 2
Surface flooding problems are in a sub-basin farther down-gradient	points = 1
No flooding problems anywhere downstream	points = 0

S 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
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Total for S 6	Add the points in the boxes above
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Rating of Value If score is: 2-4 = H 1 = M 0 = L

Record the rating on the first page

NOTES and FIELD OBSERVATIONS:

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 | 0 |
| <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 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 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 | 1 |
| <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 type present: points = 0 | |
| <input 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"/> Lake Fringe wetland | 2 points | |
| <input type="checkbox"/> Freshwater tidal wetland | 2 points | |

H 1.3. Richness of plant species

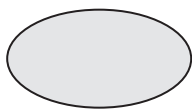
Count the number of plant species in the wetland that cover at least 10 ft².

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

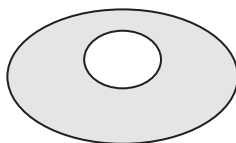
- | | | |
|------------------------------|------------|---|
| If you counted: > 19 species | points = 2 | 1 |
| 5 - 19 species | points = 1 | |
| < 5 species | points = 0 | |

H 1.4. Interspersion of habitats

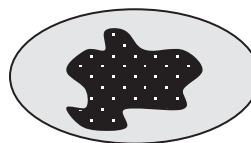
Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always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



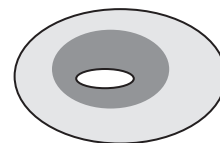
None = 0 points



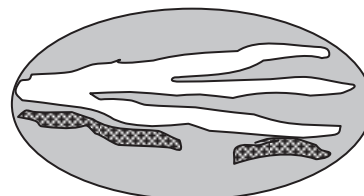
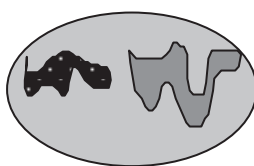
Low = 1 point



Moderate = 2 points



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



1

Wetland name or number C

<p>H 1.5. Special habitat features: Check the habitat features that are present in the wetland. <i>The number of checks is the number of points.</i> <input checked="" type="checkbox"/> Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long). <input type="checkbox"/> Standing snags (dbh > 4 in) within the wetland <input type="checkbox"/> Undercut banks are present for at least 6.6 ft (2 m) and/or overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m) <input type="checkbox"/> Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present (<i>cut shrubs or trees that have not yet weathered where wood is exposed</i>) <input type="checkbox"/> At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated (<i>structures for egg-laying by amphibians</i>) <input checked="" type="checkbox"/> Invasive plants cover less than 25% of the wetland area in every stratum of plants (<i>see H 1.1 for list of strata</i>)</p>		2
Total for H 1	Add the points in the boxes above	5

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

<p>H 2.0. Does the landscape have the potential to support the habitat functions of the site?</p>		
<p>H 2.1. Accessible habitat (include <i>only habitat that directly abuts wetland unit</i>). <i>Calculate:</i> 3 % undisturbed habitat <u> 4 </u> + [(% moderate and low intensity land uses)/2] <u> 2 </u> = <u> 5 </u> % If total accessible habitat is: > 1/3 (33.3%) of 1 km Polygon points = 3 20-33% of 1 km Polygon points = 2 10-19% of 1 km Polygon points = 1 < 10% of 1 km Polygon points = 0</p>		0
<p>H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. <i>Calculate:</i> 44 % undisturbed habitat <u> 4 </u> + [(% moderate and low intensity land uses)/2] <u> 2 </u> = <u> 46 </u> % 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</p>		1
<p>H 2.3. Land use intensity in 1 km Polygon: If > 50% of 1 km Polygon is high intensity land use points = (- 2) ≤ 50% of 1 km Polygon is high intensity points = 0</p>		-2
Total for H 2	Add the points in the boxes above	-1

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

<p>H 3.0. Is the habitat provided by the site valuable to society?</p>		
<p>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 next page) — It provides habitat for Threatened or Endangered species (any plant or animal on the state or federal lists) — It is mapped as a location for an individual WDFW priority 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 (listed on next page) within 100 m points = 1 Site does not meet any of the criteria above points = 0</p>		1

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

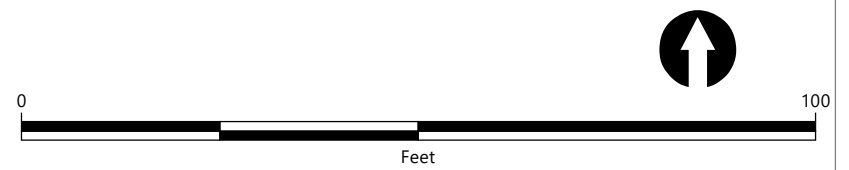
Wetland Type	Category
<i>Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.</i>	
<p>SC 1.0. Estuarine wetlands Does the wetland meet the following criteria for Estuarine wetlands? — The dominant water regime is tidal, — Vegetated, and — With a salinity greater than 0.5 ppt <input type="radio"/> Yes – Go to SC 1.1 <input checked="" type="radio"/> No = Not an estuarine wetland</p>	
<p>SC 1.1. Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? <input type="radio"/> Yes = Category I <input type="radio"/> No - Go to SC 1.2</p>	<input type="radio"/> Cat. I
<p>SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions? — 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) — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or unmowed grassland. — The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. <input type="radio"/> Yes = Category I <input checked="" type="radio"/> No = Category II</p>	<input type="radio"/> Cat. I <input type="radio"/> Cat. II
<p>SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? <input type="radio"/> Yes – Go to SC 2.2 <input checked="" type="radio"/> No – Go to SC 2.3 SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? <input type="radio"/> Yes = Category I <input checked="" type="radio"/> No = Not a WHCV SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwtlands.pdf <input type="radio"/> Yes – Contact WNHP/WDNR and go to SC 2.4 <input checked="" type="radio"/> No = Not a WHCV 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? <input type="radio"/> Yes = Category I <input checked="" type="radio"/> No = Not a WHCV</p>	<input type="radio"/> Cat. I
<p>SC 3.0. Bogs 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> 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? <input type="radio"/> Yes – Go to SC 3.3 <input checked="" type="radio"/> No – Go to SC 3.2 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? <input type="radio"/> Yes – Go to SC 3.3 <input checked="" type="radio"/> No = Is not a bog 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? <input type="radio"/> Yes = Is a Category I bog <input checked="" type="radio"/> No – Go to SC 3.4 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 4 are present, the wetland is a bog. SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy? <input type="radio"/> Yes = Is a Category I bog <input checked="" type="radio"/> No = Is not a bog</p>	<input type="radio"/> Cat. I

Wetland name or number C

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- LEGEND:**
- Study Area
 - Extent of Observed Fill
 - Delineated Wetland
 - PFO/PSS
 - PSS



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Figure 1
Wetland C Cowardin Classification Map
 Wetland Delineation and Critical Areas Report
 Marine Drive Proposed Development Project



LEGEND:

- Study Area
- Saturated Only
- Seasonally Flooded/Inundated
- Extent of Observed Fill
- Delineated Wetland

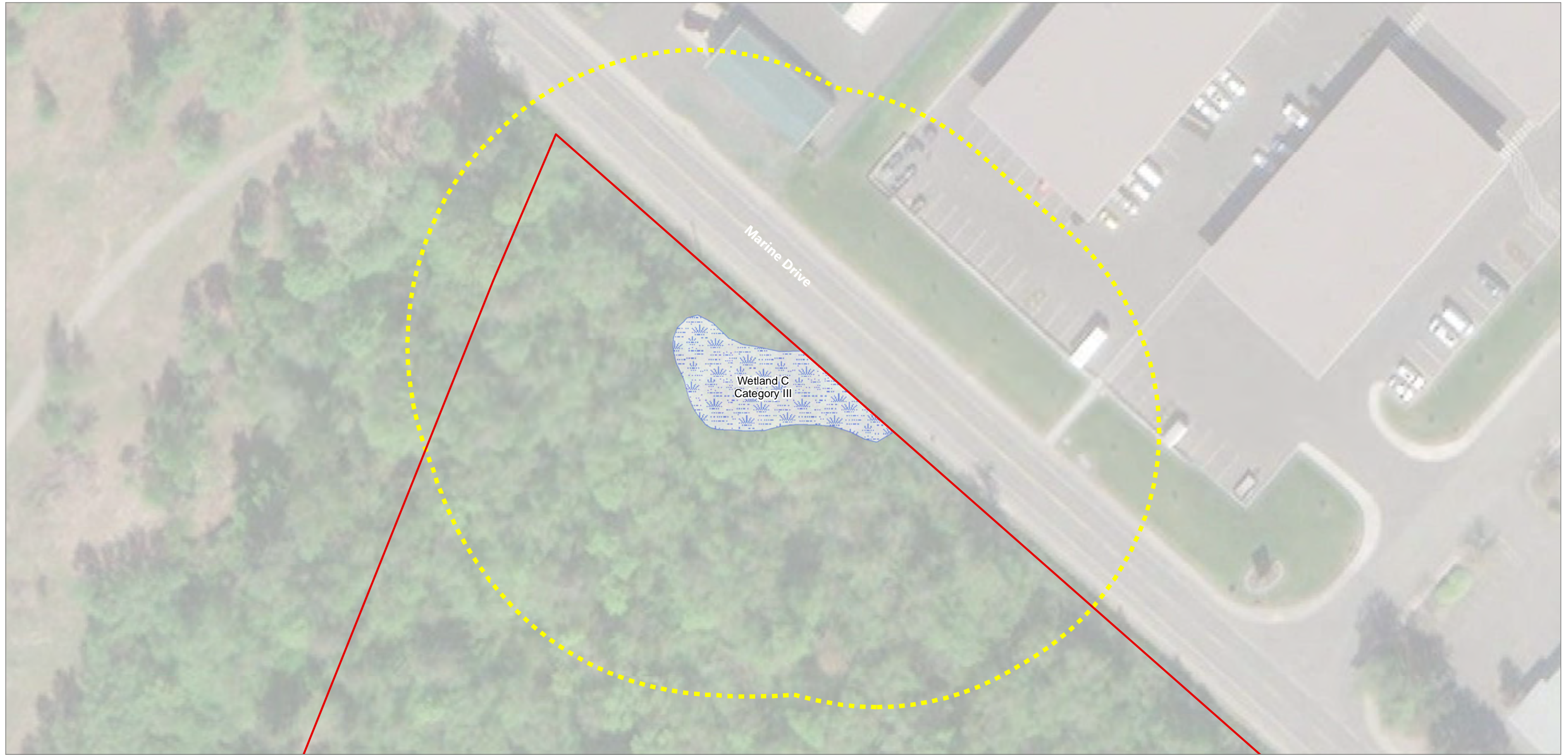




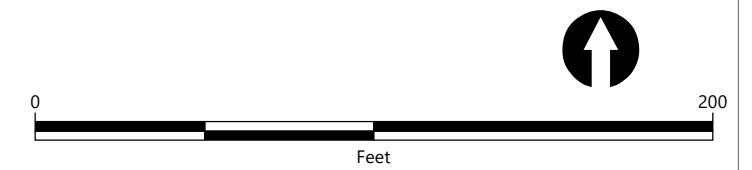
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Figure 2
Wetland C Hydroperiods Map
 Wetland Delineation and Critical Areas Report
 Marine Drive Proposed Development Project



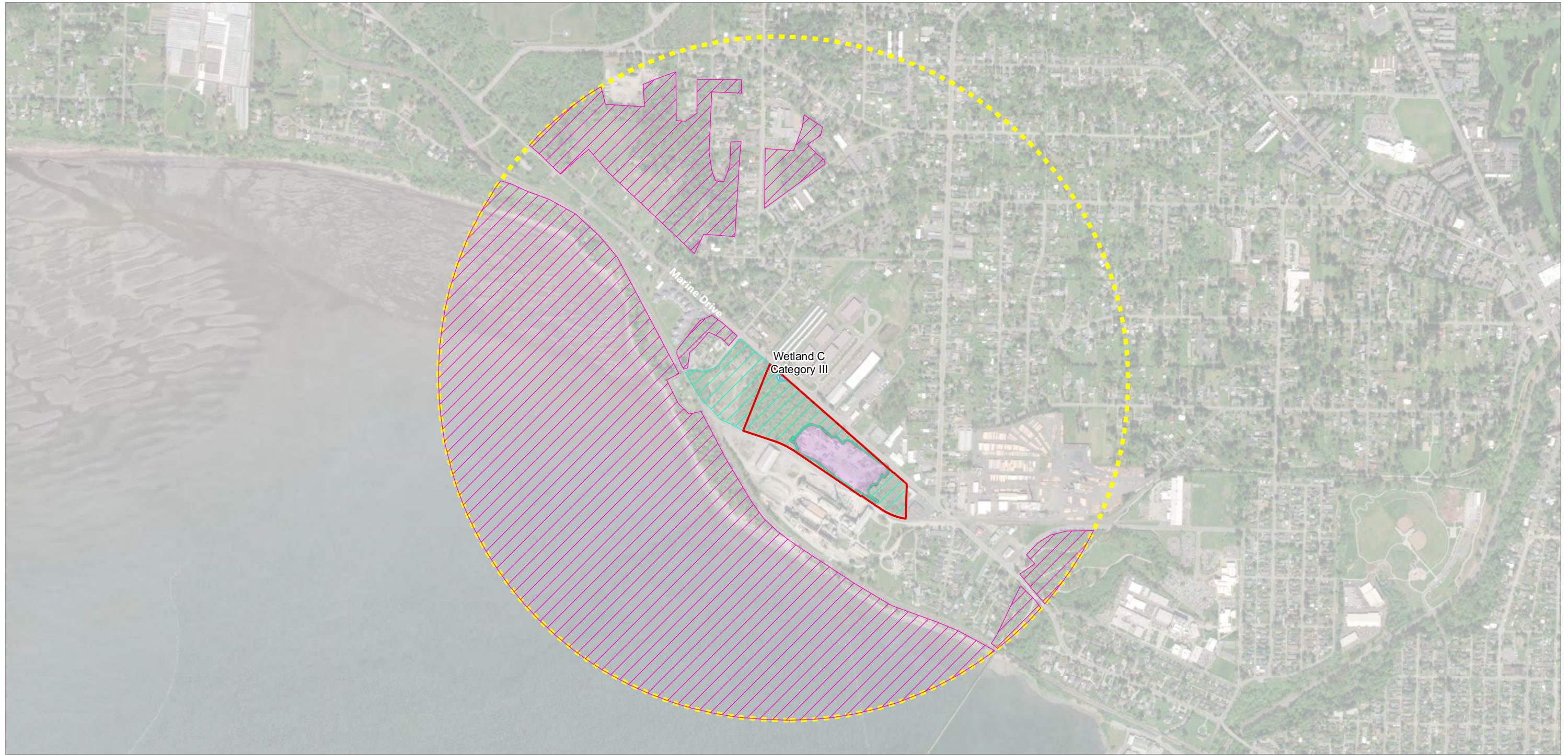
- LEGEND:**
- Study Area
 - Delineated Wetland
 - 150-Foot Buffer
 - Extent of Observed Fill



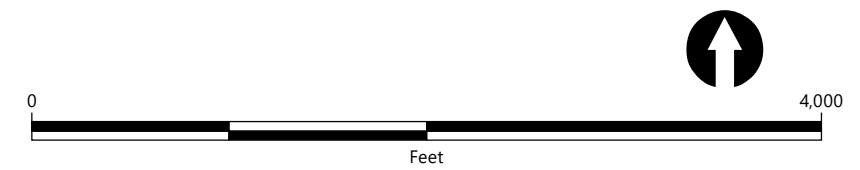
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Figure 3
Wetland C 150-Foot Buffer Map
 Wetland Delineation and Critical Areas Report
 Marine Drive Proposed Development Project



- LEGEND:**
- Study Area
 - 1-Kilometer Polygon
 - Extent of Observed Fill
 - Accessible Habitat
 - Undisturbed Habitat



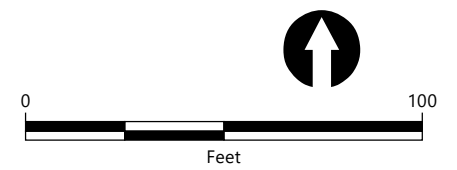
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Figure 4
Wetland C 1-Kilometer Polygon Map
 Wetland Delineation and Critical Areas Report
 Marine Drive Proposed Development Project



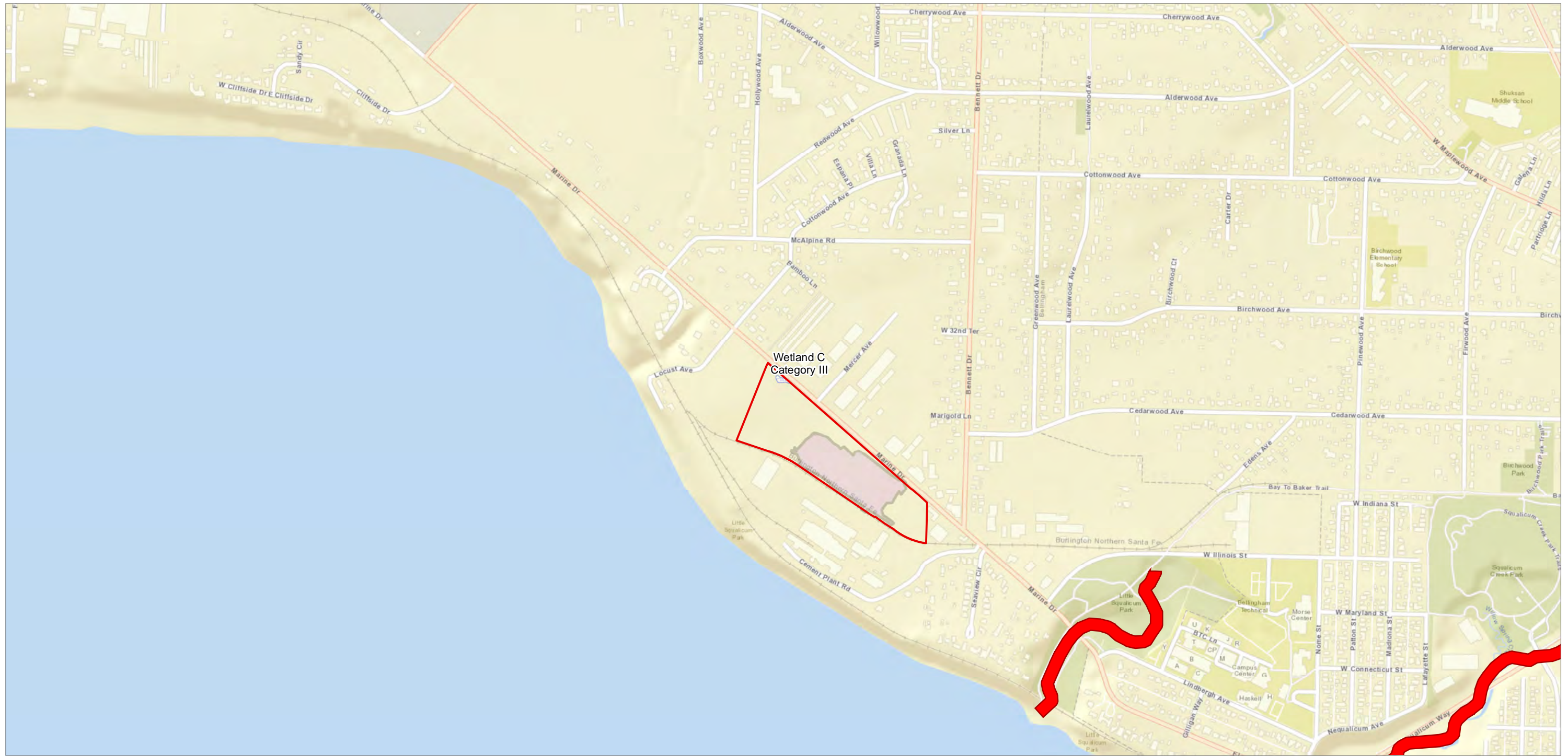
- LEGEND:**
- Study Area
 - Extent of Observed Fill
 - Delineated Wetland
 - Contributing Basin



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Figure 5
Wetland C Contributing Basin Map
 Wetland Delineation and Critical Areas Report
 Marine Drive Proposed Development Project



LEGEND:

- Study Area
- Extent of Observed Fill
- Delineated Wetland
- 303(d) Listed Waters



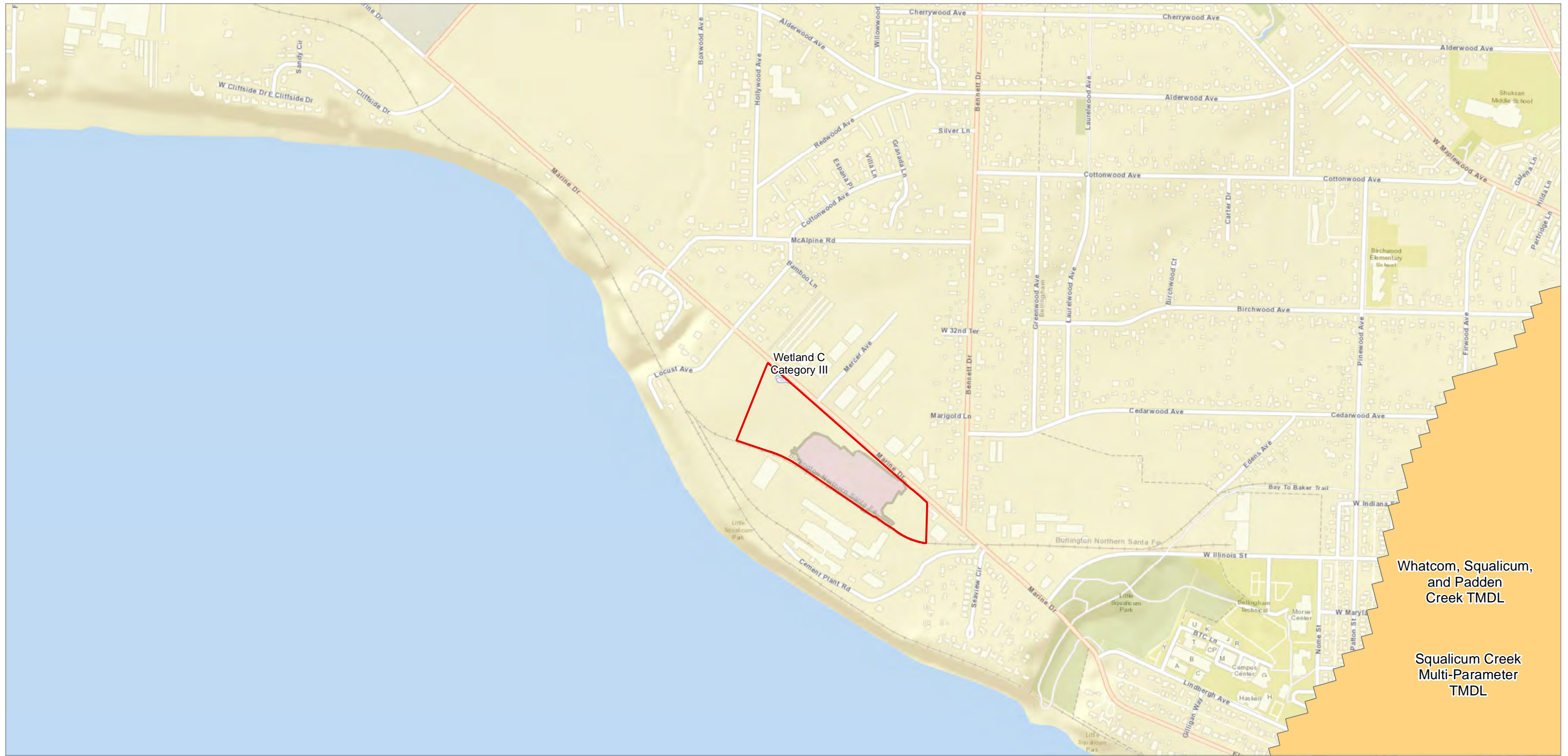


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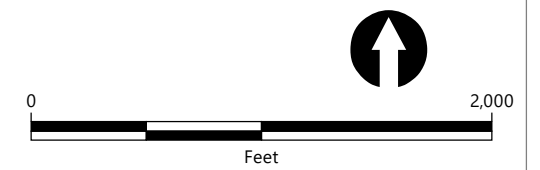
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Figure 6
Wetland C 303(d) Listed Waters Map
 Wetland Delineation and Critical Areas Report
 Marine Drive Proposed Development Project



- LEGEND:**
- Study Area
 - Extent of Observed Fill
 - Delineated Wetland
 - TMDLs in HUC12



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Figure 7
Wetland C TMDLs by Basin Map
 Wetland Delineation and Critical Areas Report
 Marine Drive Proposed Development Project

Appendix D
Photographs

Photograph 1

Wetland A: The northeastern edge of the wetland along Marine Drive



Photograph 2

Wetland A: The northwestern edge of the wetland along Marine Drive



Photograph 3

Wetland A: Dense interior of the scrub-shrub habitat near DP-01



Photograph 4

Wetland A: Thick canopy of Red-twigged dogwood (*Cornus sericea*) within the wetland boundary



Photograph 5
Wetland B: Canopy of the mixed PFO and PSS habitats



Photograph 6
Wetland B: Wetland to upland transition zone near DP-07



Photograph 7

Wetland B: Thick dogwood understory with limited herbaceous species



Photograph 8

Wetland B: Paper birch within the PFO reaches of the wetland



Photograph 9

Wetland B: The northern extent of the central scrub-shrub habitat along Marine Drive



Photograph 10

Wetland C: Closed depression surrounded by dogwood and willows

