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Technical Memorandum

To: Kurt Erickson, Ravensdale LLC File Number: 1042.0005

Fred Wagner, Ravensdale LLC

From: Matt DeCaro, Soundview Consultants LLC Date: May 30, 2018

Jeremy Downs, Soundview Consultants LLC

Re: Ravensdale LLC Reclamation Trench Filling Project

Wetland, Aquatic Area, and Fish and Wildlife Habitat Assessment

Dear Mr. Wagner and Mr. Erickson,

Soundview Consultants LLC (SVC) is assisting King County clearing and grading permit applicant Ravensdale LLC (Applicant) with wetland, aquatic area, and fish and wildlife habitat assessments in relation to portions of ten relatively small mined-out strip coal mining trenches lying within a ±699-acre site comprised of ten contiguous parcels of land owned by Erickson Logging II, LLC that are located in unincorporated King County on the south side of SE Ravensdale Way in Ravensdale, Washington.

This assessment has been conducted to support proposed mine restoration activities on the subject site, including the proposed reclamation filling and reforestation of the strip mine trenches resultant from ten previously mined-out and un-reclaimed strip coal mines within the ten parcels. (The ten trenches are individually referred to herein as Trenches A, C, D, E, F, G, H, I, J, and K and collectively referred to herein as the "subject trenches.").

SVC investigated the study area (i.e., the area within 300 feet of the subject trenches) to evaluate if any potentially-regulated wetlands, streams, or other fish and wildlife habitat are located on or adjacent to the ten trench remediation areas and to evaluate any potential adverse impacts of the proposed project to such potentially-regulated wetlands, streams, or other fish and wildlife habitat. This Technical Memorandum documents the results of this assessment.

Background Data

Location, Size, Comprehensive Plan Land Use Map Designation, and Forestry Designation of Parcels

The ten parcels that comprise the site are located in the following three sections of land: (1) the East ½ of Section 1, Township 21 North, Range 6 East; (2) the East ½ of Section 30, Township 22 North, Range 6 East; and (3) the West ½ of Section 31, Township 21 North, Range 7 East, W.M. The locations of each of the ten parcels are noted by project parcel number (1 through 10) and Assessor's parcel number on Attachment A. The project parcel numbers (1 through 10), the corresponding Assessor's parcel number of each project parcel, the parcels' approximate acreage (obtained from King County Assessor's Maps), the King County Comprehensive Plan Land Use Map Designation(s) and

Zoning classification(s) of each parcel, and the designation of each parcel in accordance with the King County Agricultural and Forest Lands Map (2016) are set forth in Table 1 below.

Table 1. Parcel Summary.

PROJECT PARCEL#	ASSESSOR'S PARCEL#	ACREAGE ^A	COMP. PLAN 2016 LAND USE MAP DESIGNATION ^B	ZONING DESIGNATION ^C	AGRICULTURE AND FOREST LANDS 2016 MAP DESIGNATIOND
1	3122079035	20.79	Forest (f)	Forest (F)	Forest Production District
2	3122079040	20.79	Forest (f)	Forest (F)	Forest Production District
3	3122079080	118.96	Forest (f)	Forest (F)	Forest Production District
4	3622069009	220.39	West ±19.5 acres: Mining (m); remainder (east part): Forest (f)	West ±19.5 acres: Mineral (M); remainder (east part): Forest (F)	The portion of this parcel zoned Forest (F) is designated Forest Production District.
5	0121069001	161.00	Forest (f)	Forest (F)	Forest Production District
6	0121069005	54.79	Forest (f)	Forest (F)	Forest Production District
7	0121069004	20.88	Forest (f)	Forest (F)	Forest Production District
8	0121069006	20.00	Forest (f)	Forest (F)	Forest Production District
9	0121069007	20.00	Forest (f)	Forest (F)	Forest Production District
10	3622069064	41.55	West part: Mining (m); east part: Forest (f)	West part: Mineral (M); east part: Forest (F)	The portion of this parcel zoned Forest (F) is designated Forest Production District.
	Total Acreage	699.15			

Notes:

- A. Acreage data is from the King County Assessor's quarter section maps (accessed 04/10/2018) on which each parcel lies.
- B. Comprehensive Plan 2016 Land Use Map Designations obtained online 4/16/2018 from the GIS Center's King County Districts and Development Conditions webpage.
- C. Zoning designations obtained online 4/16/2018 from the GIS Center's King County Districts and Development Conditions webpage.
- D. The Agriculture and Forest Lands 2016 Map is part of the King County Comprehensive Plan, 2016, Chapter Three, Rural Area and Natural Resource Lands.

For a color map exhibit created from the King County public GIS mapping system accessed April 16, 2018 of the King County Comprehensive Plan Land Use Map Designations of the project parcels and surrounding properties [an exhibit that also notes lands within the King County Forest Production District (FPD)], see Attachment B. For a color map exhibit created from the King County public GIS mapping system accessed April 16, 2018 of the King County Zoning Map Designations of the project parcels and surrounding properties, see Attachment C.

It should be noted that King County Comprehensive Plan Policy R-691 states that "[r]eclamation of mining sites in the Forest Production District should return the land to forestry."

Wetland and Aquatic Area Critical Areas

Prior to the site investigation, background research was conducted using the King County iMap, U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) map, Washington State Department of Natural Resources (DNR) stream typing map, WDFW SalmonScape mapping tool,

Washington Department of Fish and Wildlife (WDFW) Priority Habitat and Species (PHS) database, and Natural Resources Conservation Service (NRCS) Soil Survey map. All critical area determinations were made using observable vegetation, hydrology, and soils in conjunction with data from the U.S. Geographic Survey (USGS) topographic maps, NRCS, USFWS, local precipitation data (NOAA), and various orthophotographic resources.

The King County iMap (Attachment D1) and USFWS NWI map (Attachment D2) identify a mapped wetland (identified herein as "Wetland G") approximately 100 feet to the southwest of Trench G. No other wetlands are documented within 300 feet of the subject trenches.

The King County GIS data depicts with relative accuracy two aquatic areas in the northern portion of the study area: Ravensdale Creek, which comes within approximately 100 feet to the west of Trench G; and an unnamed tributary to Ravensdale Creek (identified herein as "Stream Y"), located to the north and northwest of Trench G. Ravensdale Creek and its tributary are identified as Type N (non-fish) streams by the DNR stream typing map (Attachment D3).

The NWI map and DNR stream typing map misidentify a potential Type N stream within Trench F, which is mapped as flowing offsite to the southeast; however, the King County GIS data correctly identifies this stream feature as originating greater than 300 feet to the southeast of Trench F. The DNR water typing and NWI databases also misidentify unclassified streams within Trenches A and C and a non-fish stream within Trench G; these non-existent features are correctly absent from King County's stream inventory.

The WDFW SalmonScape map (Attachment D4) does not identify any documented or modeled salmonid presence on or within 300 feet of the study area. The WDFW PHS map (Attachment D5) identifies potential cave habitat and elk (*Cervus elaphus*) presence within the general locality and a reported western pond turtle (*Actinemys marmorata*) occurrence in 1992 within 0.25-mile of the study area. No other wetlands, streams, or priority habitats or species are documented within 300 feet of the subject trenches.

Methods

Following background research, site investigations were performed by qualified SVC scientists in October and December 2017. These investigations consisted of walk-through and aerial surveys of any accessible areas within 300 feet of the subject trenches ("study area") for potentially-regulated wetlands, streams, or other fish and wildlife habitat.

Wetlands, streams, and select fish and wildlife habitats and species are regulated as critical areas per King County Code (KCC) Chapter 21A.24 [CRITICAL AREAS (Formerly Environmentally Sensitive Areas)] and subject to restricted uses/activities under the same chapter. Wetland boundaries were determined in accordance with the U.S. Army Corps of Engineers (USACE) Wetlands Delineation Manual (Environmental Laboratory, 1987), as modified according to the guidelines established in the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region, Version 2.0 (USACE, 2010). Qualified SVC wetland scientists marked boundaries of all onsite wetlands within the study area with orange surveyor's flagging labeled alpha-numerically and tied to 3-foot lath or to vegetation along the wetland boundary. Pink surveyor's flagging was labeled alpha-numerically and tied to 3-foot lath or to vegetation at formal sampling locations to mark the points where detailed data was collected. Additional informal test pits were excavated at regular intervals inside and outside of the wetland boundaries to further confirm each delineation.

Wetlands were classified using both the hydrogeomorphic (Brinson, 1993) and Cowardin (Cowardin, 1979; Federal Geographic Data Committee, 2013) classification systems and generally assessed using the Wetland Functions Characterization Tool for Linear Projects (WSDOT, 2000). Following classification and assessment, wetlands were rated and categorized using the 2004 Washington State Wetland Rating System for Western Washington (Hruby, 2004) and guidelines established in KCC 21A.24.318.

Ordinary high water (OHW) mark determinations were made using Washington State Department of Ecology's (WSDOE's) method as detailed in *Determining the Ordinary High Water Mark for Shoreline Management Act Compliance in Washington State* (Anderson et. al., 2016) and the definitions established in a portion of the Shoreline Management Act at Revised Code of Washington (RCW) 90.58.030(2)(b) and in Washington Administrative Code (WAC) 173-22-030(11). To mark the centerline or banks of potentially-regulated streams, blue surveyor's flagging was alpha-numerically labeled and tied to vegetation. Following delineation, wetland and ordinary high water (OHW) flags facing the subject trenches were located by a professional surveying firm (Contour Engineering, LLC), and a digital map was produced. The locations of the remaining wetland and OHW flags were estimated using a high-accuracy GPS device.

The fish and wildlife habitat assessment was conducted during the same site visits by qualified fish and wildlife biologists from SVC. Experienced biologists made visual observations using stationary and walking survey methods for both aquatic and upland habitats, noting any special habitat features or signs of fish and wildlife activity. Drainages and surface water features were classified using the DNR Water Typing System as outlined in WAC Section 222-16-030 and the criteria established in KCC 21A.24.355 (Aquatic areas — water types).

Results

The subject property consists of actively managed forestlands as modified by the previous coal mining activities and by ongoing forest practices. An above-ground high voltage power transmission line spans Trench E, and actively used logging and powerline access roads cross the site. The area surrounding the subject trenches was last logged between approximately 2007 and 2009. Existing vegetation within the study area is generally dominated by young, planted Douglas fir trees and nonnative, invasive vegetation such as Himalayan blackberry, Scotch broom, and reed canarygrass.

Wetlands

The site investigations identified 12 wetlands (Wetlands A through L) within 300 feet of one or more of the subject trenches (Attachment E). The identified wetlands contained indicators of wetland hydrology, hydric soils, and a predominance of hydrophytic vegetation according to current wetland delineation methodology. Wetland data forms, wetland rating forms, and wetland rating maps are provided in Attachments F, G, and H, respectively. Table 2 summarizes the wetlands identified during the site investigations.

Table 2. Wetland Summary.

	Predomin	nant Wetland Clas	Approximate	Buffer Width			
Wetland	Cowardin ^A	HGM ^B	WSDOE ^C King County		Wetland Size (square feet)	(feet) ^E	
A	PSS/EMH	Depressional	II	II	116,600	50	
В	PSS/EMH	Depressional	III	III	25,490	40	
С	PSS/EMB	Depressional	IV	IV	760	25	
D	PFOH	Depressional	IV	IV	170	25	
Е	PSSH	Depressional	IV	IV	1,070	25	
F	PFOH	Depressional	IV	IV	19,100	25	
G	PSS/EM/ABH	Depressional	II	II	734,690	90	
Н	PSS/EMH	Depressional	III	III	21,675	40	
I	PSSH	Depressional	IV	IV	26,515	25	
J	PSS/EMH	Depressional	III	III	1,660	40	
K	PSSB	Depressional	III	III	15,015	40	
L	PSS/EMB	Depressional	IV	IV	13,220	25	

Notes:

- E. Cowardin et al. (1979) or National Wetland Inventory (NWI) Class based on vegetation: PFO = Palustrine Forested, PSS = Palustrine Scrub-Shrub, PEM = Palustrine Emergent, PAB = Palustrine Aquatic Bed; Modifiers for Water Regime or Special Situations: B = Saturated, H = Permanently Flooded / Saturated
- F. Brinson, M. M. (1993).
- G. Washington State Department of Ecology (WSDOE) rating according to 2004 Washington State Wetland Rating System for Western Washington (Hruby, 2004).
- H. KCC 21A.24.318 wetland definition.
- I. KCC 21A.24.325.B buffer requirements for low intensity land uses (forest practices).

Wetland A is approximately 116,600 square feet (2.68 acres) in size and is located to the north of Trench F in Parcel 6. Wetland vegetation is dominated by hardhack (*Spiraea douglasii*), broadleaf cattail (*Typha latifolia*), salmonberry (*Rubus spectabilis*), and slough sedge (*Carex obnupta*). Hydrology for Wetland A is provided by surface sheet flow, direct precipitation, and a seasonally-high groundwater table. Soil within Wetland A met primary hydric soil indicator A1 – Histosol. Wetland A is a Palustrine Scrub-Shrub/Emergent, Permanently Flooded/Seasonally Flooded wetland. Under KCC 21A.24.318, Wetland A is a Category II depressional wetland with a total habitat score of 17 points.

Wetland B is approximately 25,490 square feet (0.59 acre) in size and is located in Parcel 7 to the east-southeast of Wetland A, on the opposite side of Trench F. Wetland vegetation is dominated by Pacific willow (*Salix lasiandra*), salmonberry, hardhack, slough sedge, and vine maple (*Acer circinatum*). Hydrology for Wetland B is provided by surface sheet flow, direct precipitation, and a seasonally-high groundwater table. Soil within Wetland B met primary hydric soil indicator F3 – Depleted Matrix. Wetland B is a Palustrine Scrub-Shrub/Emergent, Permanently Flooded/Saturated wetland. Under KCC 21A.24.318, Wetland B is a Category III depressional wetland with a total habitat score of 17 points.

Wetland C is approximately 760 square feet (0.017 acre) in size and is located in Parcel 5 approximately 200 feet to the southeast of Trench E. Wetland C appears to have been artificially created along an existing access road. Wetland vegetation is dominated by woolly sedge (*Carex pellita*), salmonberry, and Scouler's willow (*Salix scouleriana*). Hydrology for Wetland C is provided by surface sheet flow, direct precipitation, and a seasonally-high groundwater table. Soil within Wetland C met primary hydric soil indicator F3 – Depleted Matrix. Wetland C is a Palustrine Scrub-Shrub/Emergent, Saturated wetland. Under KCC 21A.24.318, Wetland C is a Category IV depressional wetland.

Wetland D is approximately 170 square feet (0.004 acre) in size and is located within the northeast portion of Parcel 7 at distance of ±50 feet east of Trench F. Wetland vegetation is dominated by slough sedge under an upland canopy of big-leaf maple (*Acer macrophyllum*) and Douglas fir. Hydrology for Wetland D is provided by surface sheet flow, direct precipitation, and a seasonally-high groundwater table. Wetland D is a Palustrine Forested, Permanently Flooded wetland. Under KCC 21A.24.318, Wetland D is a Category IV depressional wetland.

Wetland E is approximately 1,070 square feet (0.025 acre) in size and is located northwest of Trench E in Parcel 5. Wetland E appears to be an excavated depression that exhibits permanent ponding and that has developed wetland characteristics. Wetland vegetation along the periphery is dominated by salmonberry and overhanging Himalayan blackberry. Hydrology for Wetland E is provided by surface sheet flow, direct precipitation, and a seasonally-high groundwater table. Wetland E is a Palustrine Scrub-Shrub, Permanently Flooded wetland. Under KCC 21A.24.318, Wetland E is a Category IV depressional wetland.

Wetland F is approximately 19,100 square feet (0.44 acre) in size and is primarily located within the northeast portion of Parcel 7 at a distance of ±50 feet east of Trench F. The easternmost tip of Wetland F extends ±15 feet across the east boundary of Lot 7 into an abutting parcel (APN 0621079032). Wetland F appears to be a headwater wetland to an offsite, non-fish bearing stream located southeast of the site. [The offsite stream was not assessed in detail because it is located more than 300 feet from the nearest trench (Trench F).] Wetland F exhibits clear indications of anthropogenic modifications. Wetland vegetation is sparse and dominated by western red cedar, salmonberry, and slough sedge. Hydrology for Wetland F is provided by surface sheet flow, direct precipitation, and a seasonally-high groundwater table. Soil within Wetland F met primary hydric soil indicator A4 – Hydrogen Sulfide. Wetland F is a Palustrine Forested, Permanently Flooded wetland. Under KCC 21A.24.318, Wetland F is a Category IV depressional wetland.

Wetland G is approximately 734,690 square feet (16.9 acres) in size that straddles part of the common boundary between Parcels 4 and 5 and is located south of Trench G. Wetland G appears to be a headwater wetland to Ravensdale Creek. Wetland vegetation is dominated by broadleaf cattail (*Typha latifolia*) and Pacific willow. Hydrology for Wetland G is provided by surface sheet flow, direct precipitation, and a seasonally-high groundwater table. Wetland G is a Palustrine Scrub-Shrub/Emergent/Aquatic Bed, Permanently Flooded/Saturated wetland. Under KCC 21A.24.318, Wetland G is a Category II depressional wetland with a total habitat score of 22 points.

Wetland H is approximately 21,675 square feet (0.50 acre) in size and is located in the northwest portion of Parcel 4 along Ravensdale Creek, downstream of Wetland G and to the west-northwest of Trench G. Wetland vegetation is dominated by woolly sedge, various willows (*Salix* spp.), and broadleaf cattail. Hydrology for Wetland H is provided by surface sheet flow, direct precipitation, and a seasonally-high groundwater table. Soil within Wetland H met primary hydric soil indicator A4 – Hydrogen Sulfide. Wetland H is a Palustrine Scrub-Shrub/Emergent, Permanently

Flooded/Saturated wetland. Under KCC 21A.24.318, Wetland H is a Category III depressional wetland with a total habitat score of 19 points.

Wetland I is approximately 26,515 square feet (0.61 acre) in size and is located in the northwest portion of Parcel 4 at the confluence of Ravensdale Creek and "Stream Y." Wetland I likely resulted from excavation that was part of the previous coal strip mining operation and appears to be permanently flooded with greater than ten vertical feet of surface water. Wetland I only exhibits wetland characteristics along the fringe of the regulated waters. The sparse wetland vegetation in this unit includes western red cedar, red alder, and salmonberry. Wetland I is a Palustrine Scrub-Shrub, Permanently Flooded wetland. Formal wetland data plots were not collected due to the steep slopes along the wetland boundaries. Under KCC 21A.24.318, Wetland I is a Category IV depressional wetland.

Wetland J is approximately 1,660 square feet (0.038 acre) in size and is located within Parcel 4 east of the southeast end of Trench G, on the opposite side of a maintained access road and along a roadside ditch. Wetland vegetation is dominated by red alder, broadleaf cattail, and reed canarygrass. Hydrology for Wetland J is provided by surface sheet flow, direct precipitation, and a seasonally-high groundwater table. Soil within Wetland J met primary hydric soil indicator A4 – Hydrogen Sulfide. Wetland J is a Palustrine Scrub-Shrub/Emergent, Permanently Flooded wetland. Under KCC 21A.24.318, Wetland J is a Category III depressional wetland with a total habitat score of 12 points.

Wetland K is approximately 15,015 square feet (0.34 acre) in size and is located within Parcel 4 along Stream Y, a short distance to the northeast of Wetland J. Wetland vegetation is dominated by salmonberry and slough sedge. Hydrology for Wetland K is provided by surface sheet flow, direct precipitation, and a seasonally-high groundwater table. Soil within Wetland K met primary hydric soil indicator A4 – Hydrogen Sulfide. Wetland K is a Palustrine Scrub-Shrub, Saturated wetland. Under KCC 21A.24.318, Wetland K is a Category III depressional wetland with a total habitat score of 15 points.

Wetland L is approximately 13,220 square feet (0.30 acre) in size and is located within Parcel 4 west of Trench G. Wetland vegetation is dominated by reed canarygrass, lady fern (*Athyrium cyclosorum*), and small-fruited bulrush (*Scirpus microcarpus*). Hydrology for Wetland L is provided by surface sheet flow, direct precipitation, and a seasonally-high groundwater table. Soil within Wetland L met primary hydric soil indicator A4 – Hydrogen Sulfide, A11 – Depleted Below Dark Surface, and F3 – Depleted Matrix. Wetland L is a Palustrine Scrub-Shrub/Emergent, Saturated wetland. Under KCC 21A.24.318, Wetland K is a Category IV depressional wetland.

Aquatic Areas

The site investigation identified two potentially-regulated waterbodies (Ravensdale Creek and Stream Y) within 300 feet of the subject trenches, as discussed below. The locations of these identified streams are illustrated in Attachment E.

The perennial Ravensdale Creek flows a short distance to the north-northwest from Wetland G into Wetland H, then flows north from Wetland H a further short distance into the west end of Wetland I, and then continues flowing north-northwest from Wetland I across the northern portion of Parcel 4. [see the Site Plan (North), drawing Sheet 1 of 2 in Attachment E]. The onsite portion of Ravensdale Creek is greater than 6 feet wide on average and exhibits a gravel and cobble substrate. Vegetation along the banks of Ravensdale Creek within the study area is dominated by a canopy of red alder and Douglas fir with an understory of Himalayan blackberry and sword fern. In the north part of the

study area in Parcel 4, Ravensdale Creek flows subsurface through a mined-out pit that is not proposed to be filled. The DNR Water Typing Map classifies Ravensdale Creek as a Type N (non-fish-bearing) water. King County maps the creek as an unclassified stream. No documented fish presence in the portion of the Ravensdale Creek within the site is identified by the WDFW SalmonScape or PHS mapping tools. Under KCC 21A.24.355, Ravensdale Creek is considered a Type N water.

Within Parcel 4, the unnamed "Stream Y" flows west-northwest from Wetland K, empties into the excavated Wetland I through an area of very steep slopes, and then discharges into the north-flowing Ravensdale Creek. [For the flow pattern, see Site Plan (drawing Sheet 1 of 2).] Stream Y is less than 6 feet wide on average and exhibits a sandy, mucky substrate with some areas of braiding. Vegetation along the banks of Stream Y is dominated by red alder, Himalayan blackberry, and salmonberry. Based on the observed stream characteristics and the presence of scour marks, Stream Y likely conveys seasonal stormwater flows. Surface flows were observed within Stream Y during the December 2017 site investigations. Stream Y is classified on the DNR Water Typing Map as a Type N (non-fish) stream. King County maps Stream Y as an unclassified stream. Under KCC 21A.24.355, Stream Y is considered a Type N water.

Coal Mine Trenches

The following provides a summary of the subject trenches, which are non-wetland, man-made mining trenches that were excavated during the earlier strip coal mining activities on the subject property. The locations of these subject trenches are illustrated on the site plans provided in Attachment E (drawing Sheets 1 and 2). The total surface area of the subject trenches is \pm 1,360,236 square feet (31.23 acres) which encompasses approximately four percent of the \pm 699-acre site.

Trench A encompasses two adjacent, linear, excavated trenches (with a surface area of \pm 217,940 square feet [5.00 acres]) located near the main entrance of the Ravensdale LLC facility in the northwest portion of the site, extending from the west "arm" of Parcel 4 and into the south-central portion of Parcel 10. The two closely adjacent trenches that together comprise Trench A roughly parallel each other and are obvious excavated scars in the site's landscape. Trench A is highly disturbed and has been partially filled to a relatively small extent under an existing King County DPER clearing and grading permit. (The project drawings under that permit refer to Trench A's two closely adjacent parts as Trench A1 and Trench A2). Vegetation within Trench A consists of early successional aggressive species such as Douglas fir, red alder, Himalayan blackberry, and various grasses. The site investigations did not identify any potentially-regulated wetlands or aquatic areas within 300 feet of Trench A.

Trench C (with a surface area of ± 206,587 square feet [4.74 acres]) is located in an area of steep slopes in Parcel 4 (on the northern portion of the site). Trench C has so far has received a relatively minimal volume of fill material. Vegetation within the non-wetland trench is dominated by upland species including young Douglas fir, red alder, and Himalayan blackberry. Due to the steep topography within the excavation, surface water artificially drains toward the center of Trench C and then to the southwest. That artificial drainage course does not exhibit natural stream characteristics (e.g., a defined bed and banks) and would not be considered a regulated aquatic feature. The site investigations did not identify any potentially-regulated wetlands or aquatic areas within 300 feet of Trench C.

Trench D (with a surface area of \pm 54,039 square feet [1.24 acres]) is located in the southwestern portion of Parcel 5 and has been filled under an existing King County clearing and grading permit. No potentially-regulated wetlands or aquatic areas were observed within 300 feet of Trench D. No additional filling near Trench D is proposed; therefore, Trench D is not assessed further in this report.

Trench E (with a surface area of \pm 174,440 square feet [4.00 acres]) is a linear, approximately 100-foot deep strip coal mine excavation that is located east of the center of Parcel 5 and largely within the high-voltage transmission line corridor that extends generally from east to west across the center of Parcel 5. This trench was also approved for reclamation filling under an existing King County clearing and grading permit. Trench E also includes an adjoining area to the south of the filled trench (approximately four acres) that was previously filled, stabilized, and hydroseeded under the existing clearing and grading permit. The unfilled portion of the man-made Trench E is surrounded by artificially created (mined) steep slopes and cliffs which prevent safe access to the artificially impounded water in Trench E. Due to the challenges that those conditions pose to safely accessing this area on foot, the assessment methodology for this trench involved visual observations from a helicopter and from the powerline corridor. The bottom of Trench E (approximately 0.25 acre) is unvegetated and holds water year-round due to the deep nature of the excavation and the lack of any outlet. Along the edges of the permanently-flooded portion of Trench E, vegetation is dominated by Himalayan blackberry, with lesser amounts of big-leaf maple and Scotch broom. Trench E is a nonwetland, artificial waterbody that lacks a connection to any natural water and, therefore, does not constitute a regulated aquatic area under KCC 21A.24.355. Trench E does not meet the definition of an aquatic area under KCC 21A.06.072C, which states that aquatic areas do not include water features where the source of contributing water is entirely artificial. The site investigations identified two potentially-regulated wetlands (Wetlands C and E) within 300 feet of Trench E.

Trench F (with a surface area of ± 165,902 square feet [3.81 acres]) is located approximately 1,500 feet south of Trench E and is also a linear, artificial coal strip mine excavation that has not yet been reclaimed. Trench F straddles (1) most of the common boundary line between Parcels 6 and 7 (with most of the portion of the Trench F area that lies along that common boundary being located within Parcel 7) and (2) about two-thirds of the common boundary line between Parcels 6 and 8 (with most of the portion of the Trench F area that lies along that common boundary being located within Parcel 8). The southwestern portion of Trench F has been filled under the subject permittee's existing King County clearing and grading permit. Trench F is approximately 30 feet deep and largely devoid of living vegetation; several dead trees are located within the trench, primarily red alder and western red cedar. During the October 2017 site visits, no water was present within Trench F; however, this artificial, non-wetland trench clearly ponds during the rainy season as evidenced by water marks. Trench F is surrounded by upland vegetation that is dominated by an overstory of Douglas fir. The site investigations identified four potentially-regulated wetlands (Wetlands A, B, D, and F) within 300 feet of Trench F.

Trench G (with a surface area of ± 149,661 square feet [3.44 acres]) is a linear excavation in Parcel 4 that is located to the south of Trench C. The non-wetland Trench G is sparsely vegetated with Himalayan blackberry and salmonberry. During the site investigations, some perched surface water was present in Trench G due to surface runoff from surrounding uplands. This stormwater, which was perched atop compacted soils within this artificially created trench, is not indicative of a high groundwater table. A total of four formal data plots (DP-16, DP-17, DP-18, and DP-26) were excavated within Trench G to document the hydrologic conditions and confirm the lack of wetland presence within this artificial excavation. The site investigations identified four potentially-regulated wetlands (Wetlands G, H, J, and K) and two non-fish aquatic areas (Ravensdale Creek and Stream Y) within 300 feet of Trench G.

Trench H (with a surface area of \pm 78,721 square feet [1.81 acres]) is a linear, excavated strip mine that extends south-southwest to north-northeast from a point near the east edge of Parcel 4 across part of the west tip area of Parcel 3 and into Parcel 2. Trench H is located within an area of steep

topography to the east of Trench C. Trench H is vegetated with non-native, invasive vegetation such as Himalayan blackberry and common tansy. Indications of scour were observed within Trench H, as this artificial trench appears to direct stormwater to the south. Surface flow was not observed within Trench H during the site investigations, and the artificial drainage within this trench does not meet the definition of a typed water or a natural-occurring stream. No potentially-regulated wetlands or aquatic areas were observed within 300 feet of Trench H.

Trench I (with a surface area of ± 261,563 square feet [6.00 acres]) is located in the far northern portion of the subject property (along most of the north edge of Parcel 1, minimally extending into Parcel 4), immediately south of the BNSF railroad right-of-way. The area surrounding Trench I was apparently used in the past for loading coal onto rail cars, as the substrate within Trench I consists of highly compacted coal and mine tailings. Due to the artificially compacted substrate and depressional nature of the excavation, standing surface water was observed within Trench I during the December 2017 investigations. Vegetation within this non-wetland trench is dominated by the highly invasive, non-native Himalayan blackberry, and no hydric soil indicators were observed. The site investigations did not identify any potentially-regulated wetlands or aquatic areas within 300 feet of Trench I.

Trench J (with a surface area of ± 42,084 square feet [0.97 acres]) is located along an existing access road in the southwest portion of the subject property (within the north part of Parcel 9), to the southwest of Trench F. The area within and surrounding the non-wetland Trench J is highly disturbed, and vegetation is dominated by early successional aggressive species such as Douglas fir, red alder, Himalayan blackberry, Scotch broom, and various grasses. No potentially-regulated wetlands or aquatic areas were observed within 300 feet of Trench J.

Trench K is a relatively small excavated trench (with a surface area of \pm 9,299 square feet [0.21 acres]) located within Parcel 4 on a steep slope to the southeast of the south end of Trench A. The non-wetland Trench B is sparsely vegetated with non-native, invasive vegetation such as Himalayan blackberry and Scotch broom. Trench B is located on a steep slope and does not appear to impound water. The site investigations did not identify any potentially-regulated wetlands or aquatic areas within 300 feet of Trench B.

Regulatory Considerations

Wetland Buffer Requirements

Wetlands were assessed and buffer widths were established using the regulations set forth in KCC 21A.24.318 and (because the site is located outside of the Urban Growth Area) in KCC 21A.24.325.B. Wetlands A and G are Category II depressional wetlands; Wetlands B, H, J, and K are Category III depressional wetlands; and Wetlands C, D, E, F, I, and L are Category IV depressional wetlands.

Under KCC 21A.24.325.B.1, wetland buffers are established based on (1) the intensity of impact of the land use adjacent to the wetlands, (2) the category of the wetland, and (3) the habitat function scores. According to KCC 21A.24.325.B.2.c(1), the intensity of impact of the adjacent land use is considered low impact because the use of the subject site adjacent to the wetlands is forestry. The purpose of the proposed project (filling and restoring artificial trenches that resulted from past coal mining) is to reclaim and reforest those former mining areas to support long-term forestry. The proposed mine reclamation filling work is temporary and will cease upon restoration of the subject trenches.

In view of the above, each of the Category IV wetlands (Wetlands C, D, E, F, I, and L) is subject to a 25-foot buffer; each of the Category III wetlands with a habitat score of less than 20 total points (Wetlands B, J, H, and K) is subject to a 40-foot buffer; Wetland A, a Category II wetland with a habitat score less than 20 points, is subject to a 50-foot buffer; and Wetland G, a Category II wetland with a total habitat score of 22, is subject to a 90-foot buffer.

Aquatic Area Buffer Requirements

Ravensdale Creek and Stream Y are considered Type N (non-fish bearing) waterbodies under KCC 21A.24.355.A. According to KCC 21A.24.358.B, Type N streams located outside of the Urban Growth Area are subject to 65-foot standard buffers.

Recommendations

The following management recommendations are provided to ensure the protection of the identified critical areas and associated buffers:

- Temporary silt fencing should be installed prior to construction in between the fill limits and adjacent buffer areas, and any other necessary erosion control best management practices (BMPs) should be used during all land disturbing activities.
- Confine all reclamation work to areas outside of the buffer areas.
- Keep heavy equipment and vehicles out of the onsite wetlands, streams, and buffer areas at all times.
- Do not place fill or clearing debris within the wetlands, streams, or buffer areas.
- Pesticides, herbicides, and synthetic fertilizers should not be used or stored within 50 feet of
 the wetlands and streams, except when used in accordance with the label directions for control
 of noxious and/or invasive species.

Summary

The proposed project includes the reclamation filling and reforestation of the subject trenches, which consist of ten mined-out and un-reclaimed strip coal mines. Following the reclamation fill actions, the reclaimed mines will be replanted with Douglas fir stakes at a minimum density of 350 trees per acre (or in accordance with the Applicant's permit requirements) which will revegetate the reclaimed subject trenches in support of long-term forestry on the subject site. By following the recommendations provided herein, the reclamation trench filling project will eliminate safety hazards posed by the subject trenches, improve onsite habitat conditions, and re-establish drainage patterns. The total surface area of the subject trenches is \pm 1,360,236 square feet (31.23 acres) which encompasses approximately four percent of the \pm 699-acre site.

The site investigations identified 12 wetlands (Wetlands A through L) and two Type N aquatic areas (Ravensdale Creek and Stream Y) within 300 feet of one or more of the subject trenches. The subject trenches, critical areas, and associated buffers are illustrated in Attachment E. The engineered design includes careful site planning in order to avoid direct impacts to the regulated wetlands, aquatic areas, and associated buffer areas. As such, the project is proposed outside of all potentially-regulated critical areas and their buffers.

If you have any further questions, please contact us at your earliest convenience.

Sincerely,

Matt DeCaro

Environmental Planner/Project Manager

May 30, 2018

Date

Jeremy Downs

Principal Scientist/Environmental Planner

May 30, 2018

Date

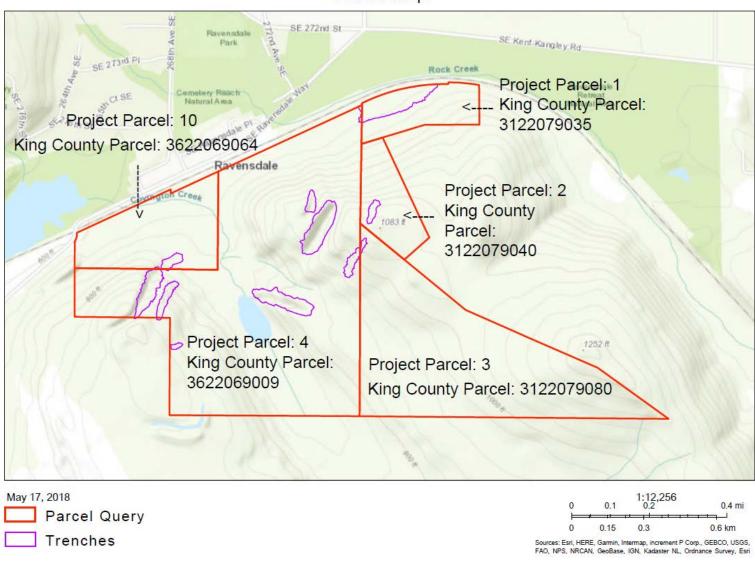
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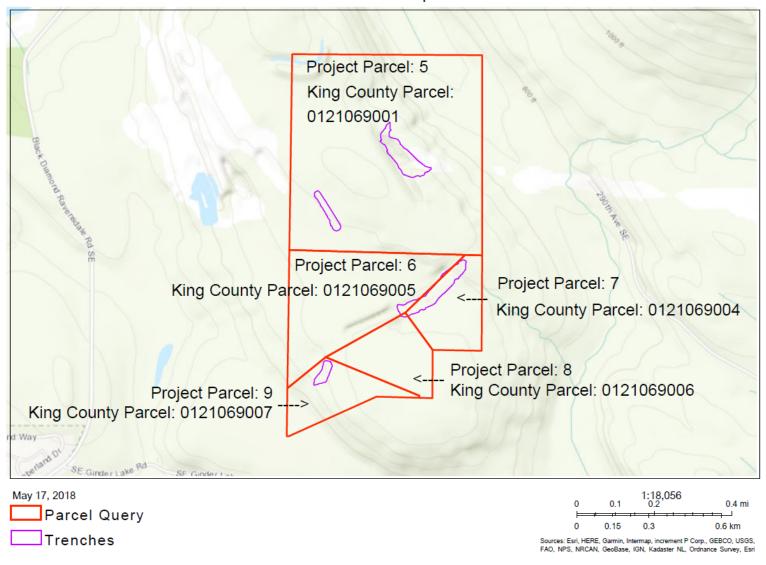
U.S. Army Corps of Engineers. 2010. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0), ed. J. S. Wakeley, R. W. Lichvar, and C. V. Noble. ERDC/EL TR-10-3. Vicksburg, MS: U.S. Army Engineer Research and Development.

Attachment A – Parcel Maps

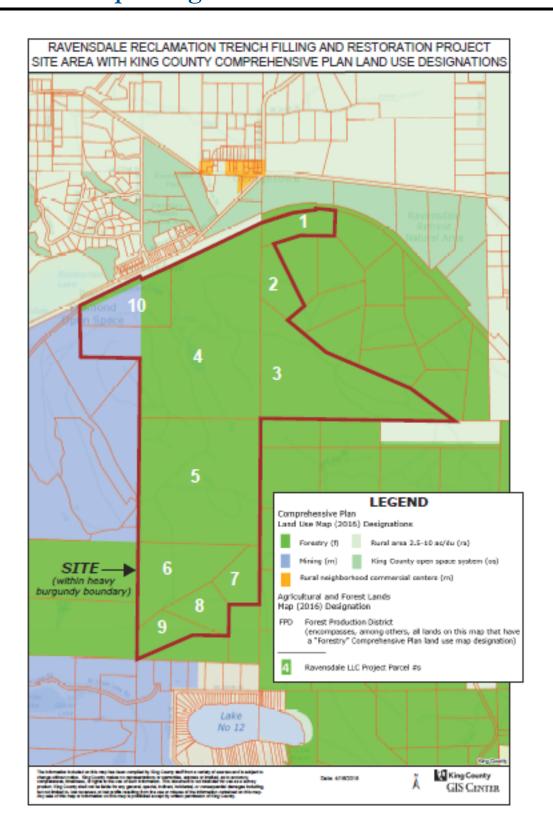
Parcel Map



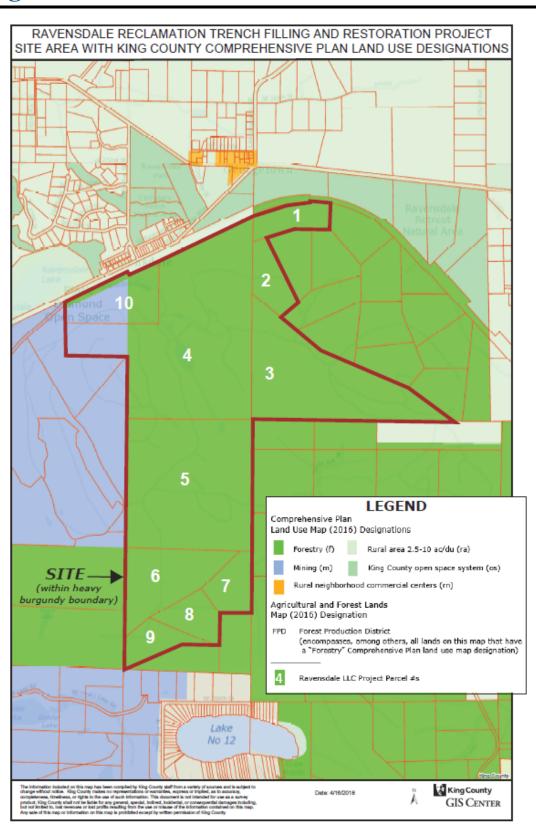
Parcel Map



Attachment B – King County Comprehensive Plan Land Use Map Designations



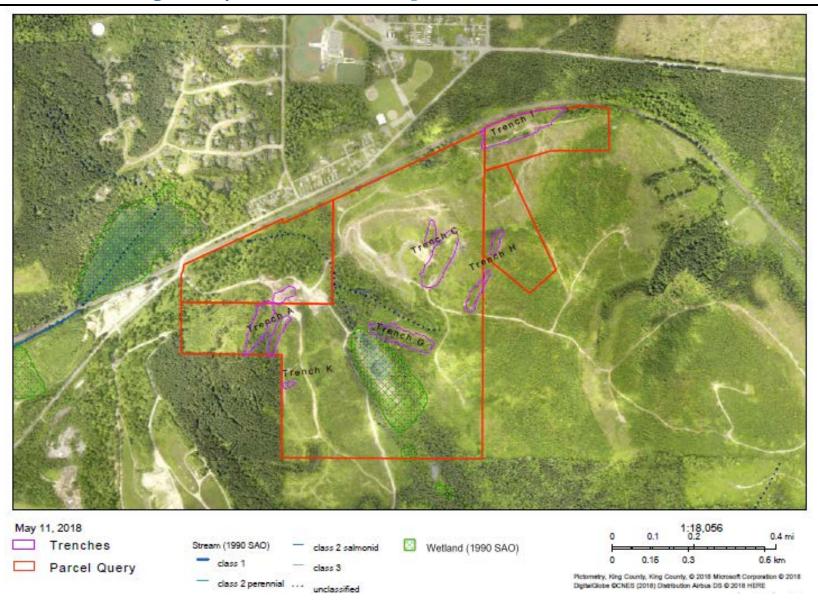
Attachment C – King County Zoning Map Designations

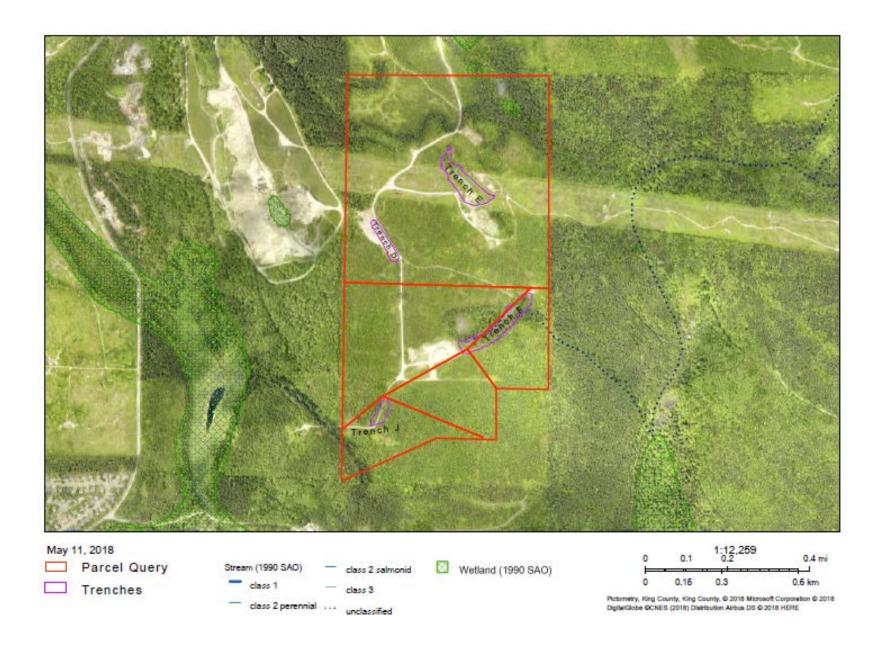


Attachment D – Background Information

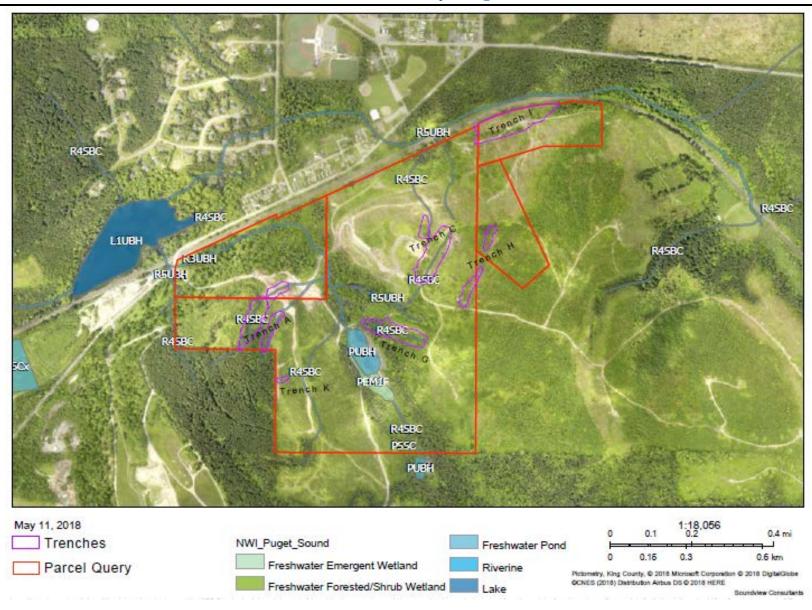
This attachment includes a King County Sensitive Areas Maps (D1), USFWS National Wetland Inventory Maps (D2), DNR Stream Typing Maps (D3), WDFW SalmonScape Maps (D4), and WDFW Priority Habitat and Species Maps (D5).

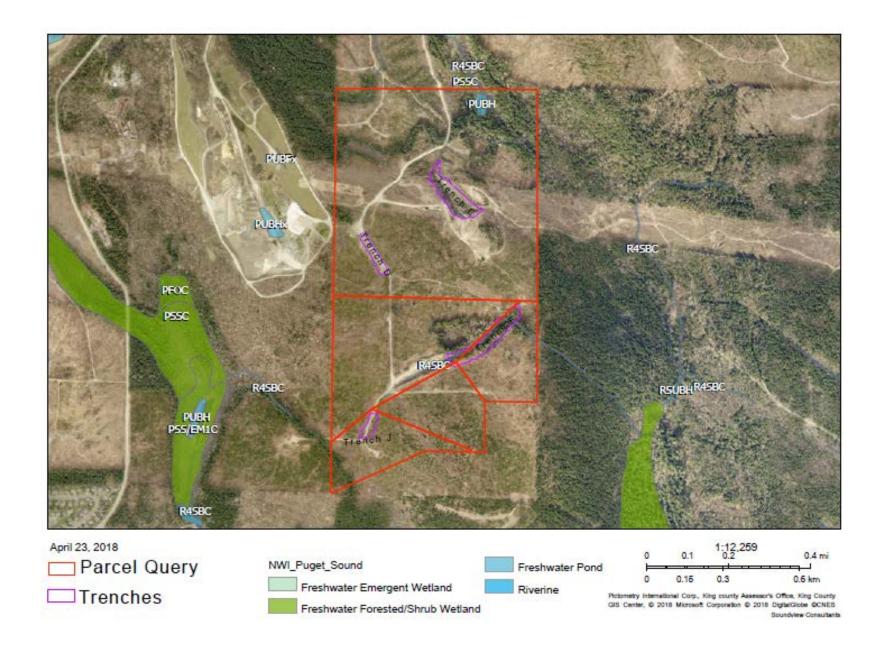
Attachment D1 – King County Sensitive Areas Maps



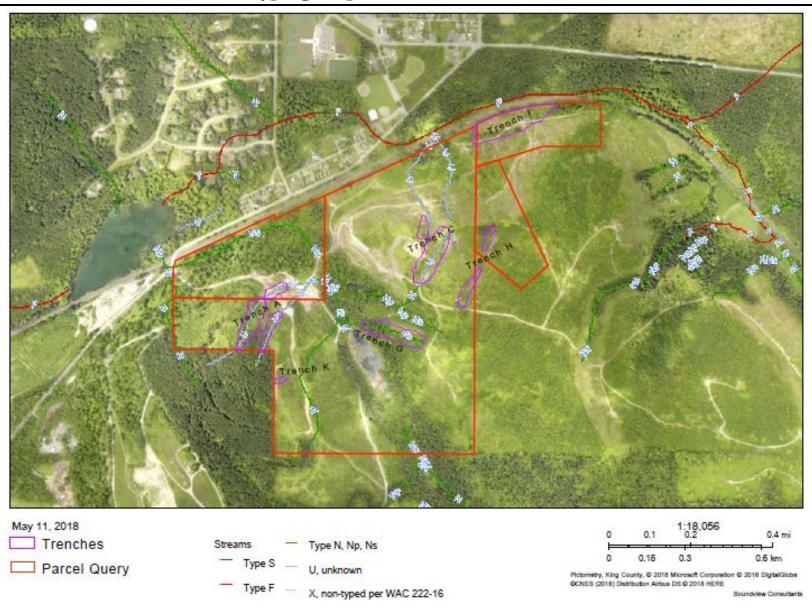


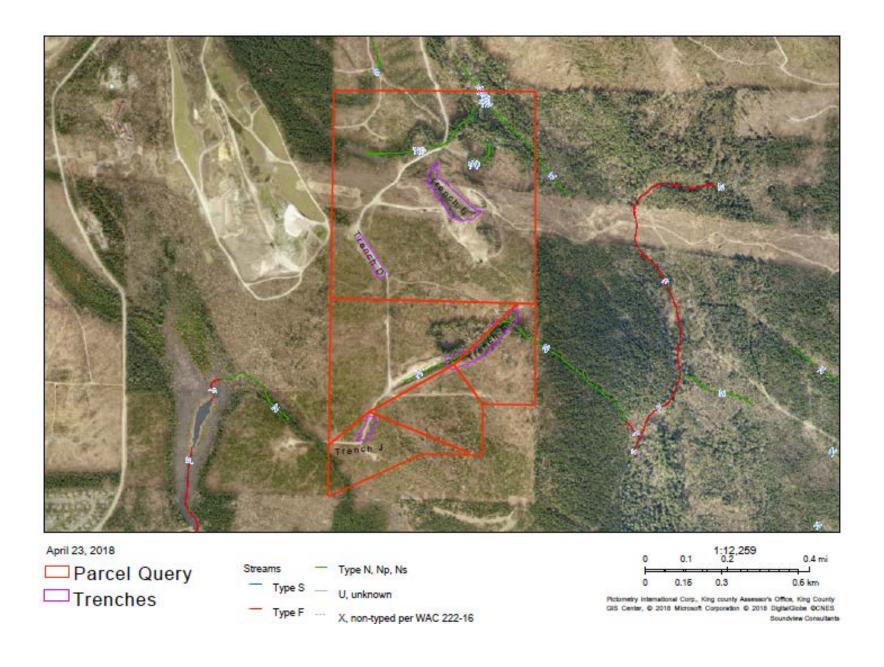
Attachment D2 – USFWS National Wetland Inventory Maps



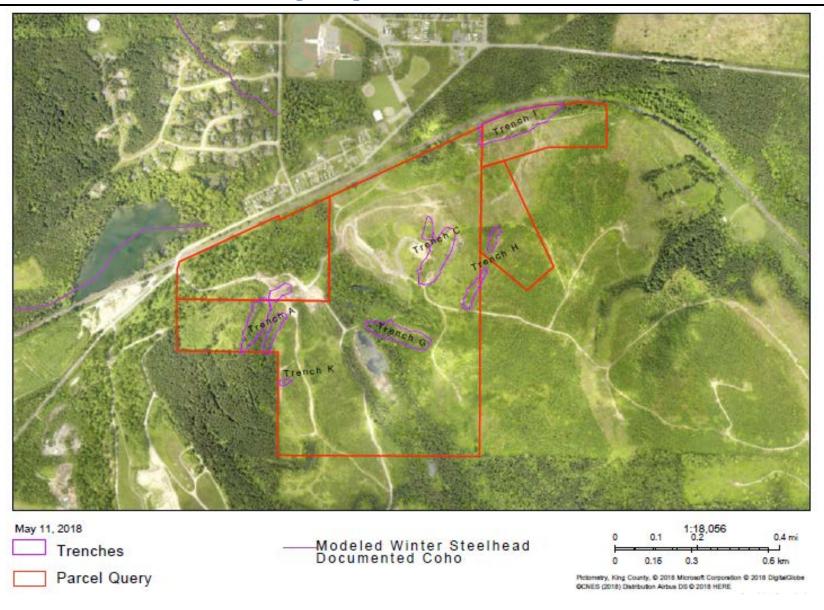


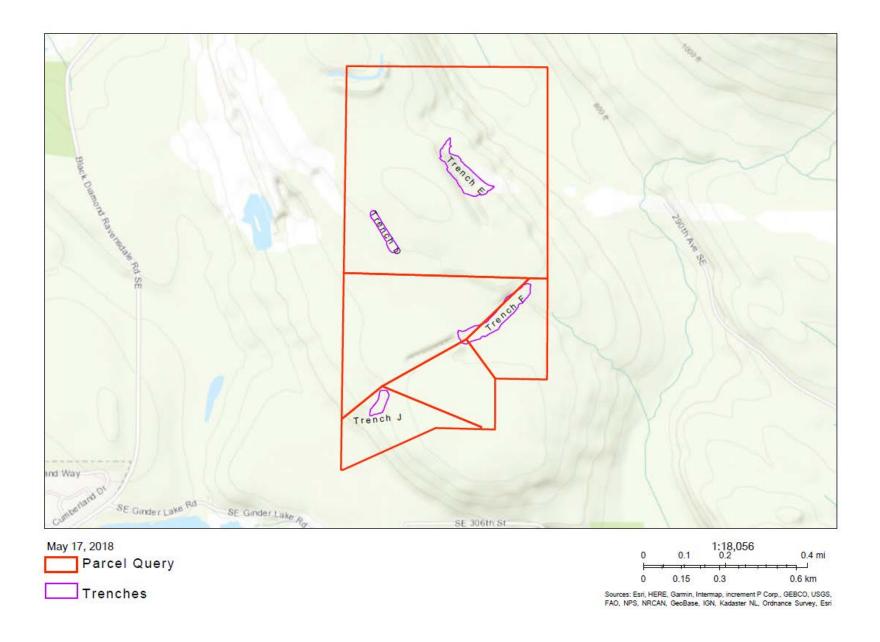
Attachment D3 – DNR Stream Typing Maps





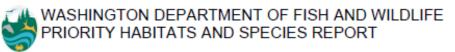
Attachment D4 – WDFW SalmonScape Maps





Attachment D5 – WDFW Priority Habitat and Species Maps





SOURCE DATASET: PHSPlusPublic

Query ID: P170928140138

REPORT DATE: 09/28/2017 2.01

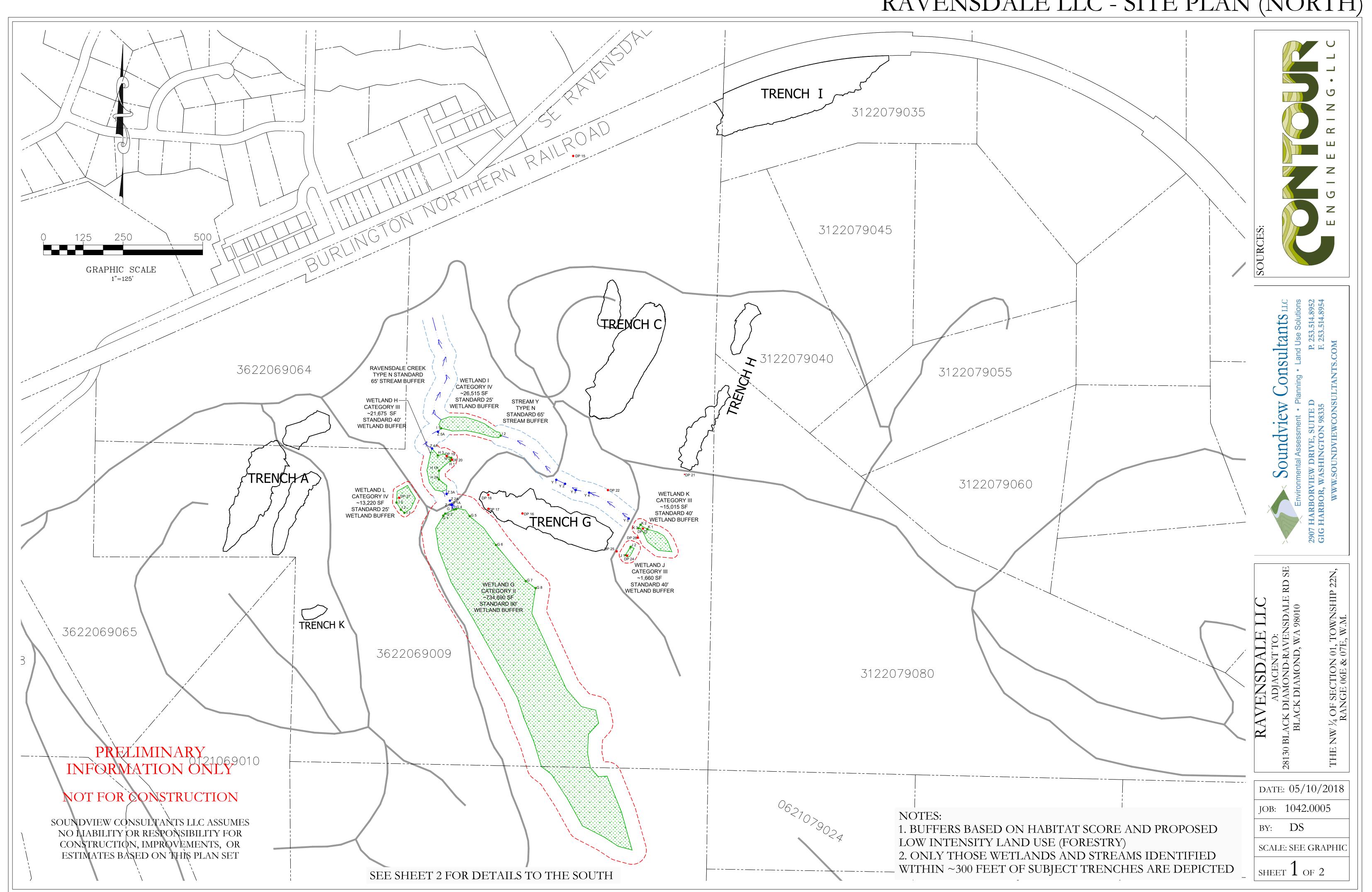
Common Name Scientific Name Notes	Site Name Source Dataset Source Record Source Date	Priority Area Occurrence Type More Information (URL) Mgmt Recommendations	Accuracy	Federal Status State Status PHS Listing Status	Sensitive Data Resolution	Source Entity Geometry Type
Caves Or Cave-rich Areas	PHSPTS 902275	Habitat Feature Habitat Feature N/A	1/4 mile (Quarter	N/A N/A PHS LISTED	Y TOWNSHIP	WA Dept. of Fish and Wildlife Points
Elk Cervus elaphus	GREEN/CEDAR RIVER PHSREGION 918540	Regular Concentration Regular concentration http://wdfw.wa.gov/publication	General locality	N/A N/A PHS LISTED	N AS MAPPED	WA Dept. of Fish and Wildlife Polygons
Freshwater Forested/Shrub	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA.	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Western Pond Turtle Actinemys marmorata	WS_OccurPoint 57 July 07, 1992	Occurrence Biotic detection http://wdfw.wa.gov/publication	1/4 mile (Quarter ns/pub.php?	N/A Endangered PHS LISTED	Y QTR-TWP	WA Dept. of Fish and Wildlife Points

DISCLAIMER. This report includes information that the Washington Department of Fish and Wildlife (WDFW) maintains in a central computer database. It is not an attempt to provide you with an official agency response as to the impacts of your project on fish and wildlife. This information only documents the location of fish and wildlife resources to the best of our knowledge. It is not a complete inventory and it is important to note that fish and wildlife resources may occur in areas not currently known to WDFW bloiogists, or in areas for which comprehensive surveys have not been conducted. Site specific surveys are frequently necessary to rule out the presence of priority resources. Locations of fish and wildlife resources are subject to viaition caused by disturbance, changes in season and weather, and other factors. WDFW does not recommend using reports more than six months old.

09/28/2017 2.01

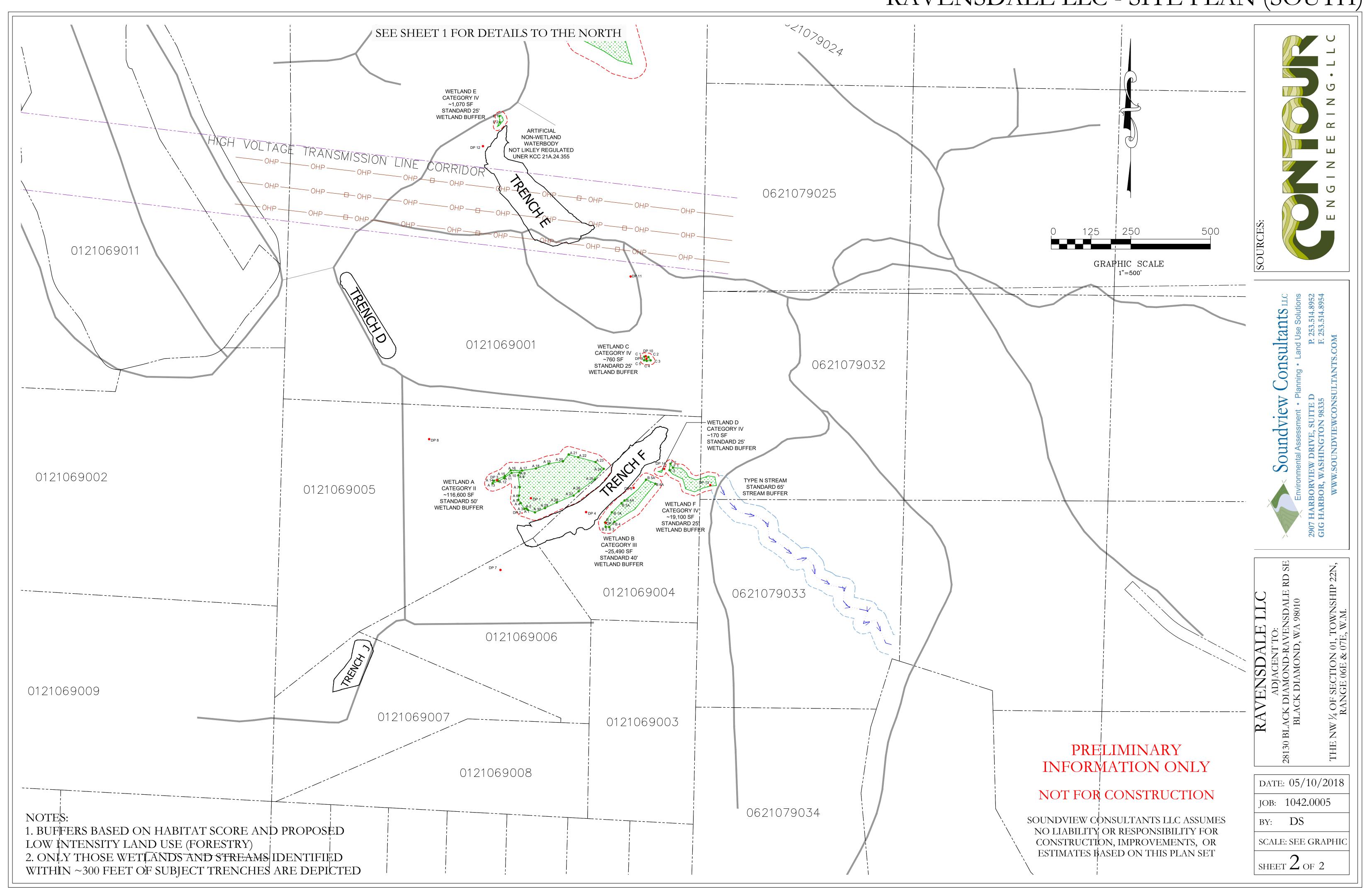
Attachment E – Site Plans

RAVENSDALE LLC - SITE PLAN (NORTH)



DRAFT FOR REVIEW

RAVENSDALE LLC - SITE PLAN (SOUTH)



DRAFT FOR REVIEW

Attachment F – Data Forms

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

Project/Site: 1042.0005 Ravensdale	City/County: Ravensdale/King					Sampling Date: 10-12-2017		
Applicant/Owner: Ravensdale LLC					State: WA	Sampling Point: <u>DP-1</u>		
Investigator(s): Richard Peel, Emily Swaim	Section, Township, Range: 01, 22N, 06E & 07E							
Landform (hillslope, terrace, etc.): Depression		Local	relief	(concave,	convex, none): Concave	e): <u>Concave</u> Slope (%): <u>0</u>		
Subregion (LRR): A2	Lat: <u>47.33</u>	346833	34		Long: -121.97894787	Datun	n: <u>WGS 84</u>	
Soil Map Unit Name: Beausite gravelly sandy loam					NWI classificat	ion: N/A		
Are climatic / hydrologic conditions on the site typical for this	s time of yea	ır? Ye	s 🛛	No ☐ (If	no, explain in Remarks.)			
Are Vegetation, Soil, or Hydrology sign	nificantly dist	turbed	?	Are "No	rmal Circumstances" pres	ent? Yes⊠ N	lo 🗌	
Are Vegetation, Soil, or Hydrology natu	rally probler	natic?		(If neede	ed, explain any answers in	Remarks.)		
SUMMARY OF FINDINGS – Attach site map	showing	samp	oling	point lo	ocations, transects,	important fea	atures, etc.	
Hydrophytic Vegetation Present? Yes ⊠ No ☐								
Hydric Soil Present? Yes ⊠ No □				Sampled n a Wetlan				
Wetland Hydrology Present? Yes ⊠ No □		,	WILIIII	ı a vvellalı	u: Tes 🖂 No	, L		
Remarks: All three wetland criteria observed. Located in V	Vetland A.							
VEGETATION – Use scientific names of plan	ts.							
	Absolute				Dominance Test works	heet:		
Tree Stratum (Plot size: 30 ft) 1		Species? Statu			Number of Dominant Spe That Are OBL, FACW, or		(A)	
2					Total Number of Domina	nt		
3					Species Across All Strata	a: <u>2</u>	(B)	
4	0				Percent of Dominant Spe That Are OBL, FACW, or		(A/B)	
Sapling/Shrub Stratum (Plot size: 15 ft) 1. Spiraea douglasii	<u>15</u>	Vac		EACW	Prevalence Index work	sheet		
2					Total % Cover of:		/ by:	
3					OBL species		-	
4.					FACW species			
5					FAC species	x 3 =		
	15				FACU species	x 4 =		
Herb Stratum (Plot size: 5 ft)					UPL species			
1. Typha latifolia					Column Totals:	(A)	(B)	
2					Prevalence Index :	= B/A =		
4					Hydrophytic Vegetation			
5.					☐ Rapid Test for Hydro		1	
6.						50%		
7.					☐ Prevalence Index is	≤3.0 ¹		
8					☐ Morphological Adapt data in Remarks			
10					☐ Wetland Non-Vascul	ar Plants¹		
11					☐ Problematic Hydroph	ıytic Vegetation¹ ((Explain)	
	30		tal Co	ver	¹ Indicators of hydric soil			
Woody Vine Stratum (Plot size: 30 ft)					be present, unless distur	bed or problemati	IC.	
1					Hydrophytic			
2					Vegetation Present? Yes	⊠ No □		
% Bare Ground in Herb Stratum <u>70</u>	0	= 101	ıaı Co	ver	rresent! 188			
Remarks: Hydrophytic vegetation criteria observed throug	h dominance	e test.						

		e to the	depth ne	eeded to document		or commi	i tile absence	or maidatoroly
Depth (inches)	Matrix Color (moist)	%	Colc	Redox Fea		Loc ²	Texture	Remarks
0-6	10YR 3/2	100		<u> </u>	<u> 1 ypc</u>			
			_ =	-	<u>-</u>		Peat	Fibric
6-24	10YR 2/1	100	_ =_	-			Peaty Muck	Hemic
	-							
¹ Type: C=C	Concentration, D=De	pletion,	RM=Red	uced Matrix, CS=Cov	ered or Coat	ed Sand Gr	rains. ² Lo	cation: PL=Pore Lining, M=Matrix.
Hydric Soil	Indicators: (Appli	cable to	all LRR	s, unless otherwise	noted.)		Indicate	ors for Problematic Hydric Soils ³ :
				Sandy Redox (S5)				n Muck (A10)
	pipedon (A2)			Stripped Matrix (S6)				l Parent Material (TF2)
	istic (A3)			_oamy Mucky Minera		t MLRA 1)		y Shallow Dark Surface (TF12)
	en Sulfide (A4)	(0.44)		_oamy Gleyed Matrix	(F2)		∐ Oth	er (Explain in Remarks)
	d Below Dark Surfa	ce (A11)		Depleted Matrix (F3)	(E6)		3Indiaat	ore of hydrophytic vegetation and
	ark Surface (A12) Mucky Mineral (S1)			Redox Dark Surface (Depleted Dark Surfac	. ,			ors of hydrophytic vegetation and and hydrology must be present,
	Gleyed Matrix (S4)			Redox Depressions (. ,			ss disturbed or problematic.
	Layer (if present):			todox Boprocolono (. • ,			se distance of problematic.
Type:				_				
Depth (in	nches):						Hydric Soi	I Present? Yes ⊠ No □
Domarke: H	ydric soil indicator A	11 obsor	wod				1.,	
rtomanto. 11	yano son maioator 7	(1 00001	vou.					
HYDROLO)GY							
Wetland Hy	drology Indicators	s:						
Primary Indi	cators (minimum of	one req	uired; ch	eck all that apply)			Seco	ndary Indicators (2 or more required)
☐ Surface	Water (A1)			☐ Water-Stained L	eaves (B9) (xcept MLF	RA 🗆 V	Vater-Stained Leaves (B9) (MLRA 1, 2,
	ater Table (A2)			1, 2, 4A, and	l 4B)			4A, and 4B)
	on (A3)			☐ Salt Crust (B11)				Prainage Patterns (B10)
☐ Water M	larks (B1)			☐ Aquatic Inverteb	rates (B13)			ry-Season Water Table (C2)
☐ Sedimer	nt Deposits (B2)			☐ Hydrogen Sulfid	e Odor (C1)		□s	saturation Visible on Aerial Imagery (C9)
☐ Drift Dep	posits (B3)			☐ Oxidized Rhizos	pheres along	Living Roo	ts (C3) 🔲 G	Geomorphic Position (D2)
☐ Algal Ma	at or Crust (B4)			☐ Presence of Rec	duced Iron (C	4)	□s	shallow Aquitard (D3)
☐ Iron Dep	oosits (B5)			☐ Recent Iron Red	uction in Tille	d Soils (C6)	AC-Neutral Test (D5)
☐ Surface	Soil Cracks (B6)			☐ Stunted or Stres	sed Plants (D	1) (LRR A)	□R	Raised Ant Mounds (D6) (LRR A)
☐ Inundati	on Visible on Aerial	Imagery	(B7)	☐ Other (Explain in	n Remarks)		□ F	rost-Heave Hummocks (D7)
☐ Sparsely	y Vegetated Conca	e Surfac	ce (B8)					
Field Obser	rvations:							
Field Obser		Yes 🗌	No ⊠	Depth (inches):				
Field Obser	ter Present?	Yes □ Yes ⊠	No ⊠ No □	Depth (inches): Depth (inches): 12				
Field Obser Surface Water Water Table	ter Present? e Present?	Yes 🖂	No 🗌	Depth (inches): 12		Wetl	and Hydrolog	uv Present? Yes ⊠ No □
Field Obser Surface War Water Table Saturation F (includes ca	ter Present? e Present? Present? upillary fringe)	Yes ⊠ Yes ⊠	No 🗌	Depth (inches): 12 Depth (inches): 8	_			gy Present? Yes ⊠ No □
Field Obser Surface War Water Table Saturation F (includes ca	ter Present? e Present? Present? upillary fringe)	Yes ⊠ Yes ⊠	No 🗌	Depth (inches): 12	_			gy Present? Yes ⊠ No □
Field Obser Surface War Water Table Saturation F (includes ca	ter Present? e Present? Present? upillary fringe)	Yes ⊠ Yes ⊠	No 🗌	Depth (inches): 12 Depth (inches): 8	_			y Present? Yes ⊠ No □
Field Obser Surface War Water Table Saturation F (includes ca Describe Re	ter Present? e Present? Present? upillary fringe)	Yes ⊠ Yes ⊠ m gauge	No □ No □	Depth (inches): 12 Depth (inches): 8 ing well, aerial photo	_			y Present? Yes ⊠ No □
Field Obser Surface War Water Table Saturation F (includes ca Describe Re	ter Present? Present? Present? pillary fringe) ecorded Data (strea	Yes ⊠ Yes ⊠ m gauge	No □ No □	Depth (inches): 12 Depth (inches): 8 ing well, aerial photo	_			gy Present? Yes ⊠ No □
Field Obser Surface War Water Table Saturation F (includes ca Describe Re	ter Present? Present? Present? pillary fringe) ecorded Data (strea	Yes ⊠ Yes ⊠ m gauge	No □ No □	Depth (inches): 12 Depth (inches): 8 ing well, aerial photo	_			yy Present? Yes ⊠ No □

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

Project/Site: 1042.0005 Ravensdale	(City/County	y: <u>Ravensda</u>	ale/King	Sampling Date: 10-12-2017		
Applicant/Owner: Ravensdale LLC				State: WA	Sampling Point: <u>DP-2</u>		
	Section, Township, Range: <u>01, 22N, 06E & 07E</u>						
Landform (hillslope, terrace, etc.): Hillslope		Slope (%): <u>3</u>					
Subregion (LRR): A2			•	·			
Soil Map Unit Name: Beausite gravelly sandy loam				_			
Are climatic / hydrologic conditions on the site typical for this							
Are Vegetation, Soil, or Hydrology sign	-		•	ormal Circumstances" pres	ent? Yes⊠ No□		
Are Vegetation, Soil, or Hydrology natu				ed, explain any answers in			
SUMMARY OF FINDINGS – Attach site map s					•		
			3				
Hydrophytic Vegetation Present? Yes ⊠ No ☐ Hydric Soil Present? Yes ☐ No ☒		Is th	e Sampled	l Area			
Wetland Hydrology Present? Yes ☐ No ☒		with	in a Wetlar	nd? Yes ☐ No	o 🛛		
Remarks: Not all three wetland criteria observed; no hydric	soil or wetla	and hydrol	ogy indicato	ors present.			
		•	0,	•			
VEGETATION – Use scientific names of plant	s.						
Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?		Dominance Test works			
1. Alnus rubra	75			Number of Dominant Sp That Are OBL, FACW, o			
2. Picea sitchensis	15			Total Number of Domina			
3. Thuja plicata	5	No	FAC	Species Across All Strate			
4. Tsuga heterophylla	5	No	<u>FACU</u>	Percent of Dominant Speci	ocios		
Sapling/Shrub Stratum (Plot size: 15 ft)	100 = Total Cover		That Are OBL, FACW, or FAC: 100% (A/B)				
1. Rubus spectabilis	<u>15</u>	Yes	FAC	Prevalence Index work	sheet:		
2. Rubus armeniacus	5	No	FAC	Total % Cover of:	Multiply by:		
3. Rubus lacinatus	5	No	FACU		x 1 =		
4				•	x 2 =		
5					x 3 =		
Herb Stratum (Plot size: 5 ft)	<u>5</u> = Total Cover			FACU species x 4 = UPL species x 5 =			
1. Carex obnupta	75	Yes	OBL		(A) (B)		
2. Athyrium cyclosorum			FAC	Column rotals.	(A) (B)		
3				Prevalence Index	= B/A =		
4				Hydrophytic Vegetation	n Indicators:		
5				□ Rapid Test for Hydro	· ·		
6				□ Dominance Test is >			
7				Prevalence Index is			
8					tations¹ (Provide supporting or on a separate sheet)		
9				☐ Wetland Non-Vascul	' '		
10				☐ Problematic Hydroph	nytic Vegetation¹ (Explain)		
11				¹ Indicators of hydric soil	and wetland hydrology must		
Woody Vine Stratum (Plot size: 30 ft)	80	= Total C	over	be present, unless distur	bed or problematic.		
1				Hydrophytic			
2				Vegetation			
% Bare Ground in Herb Stratum 20	0	= Total C	over	Present? Yes	No 🗌		
Remarks: Hydrophytic vegetation criteria met through dom	inance test	and rapid t	est.	<u> </u>			
, , , ,		,					

Profile Desc	cription: (Describe	e to the d	epth ne	eded to docu	ment the	indicator	or confirm	n the abse	nce of indicators.)
Depth (inches)	Matrix Color (moist)	%	Colo	Redo	ox Featur %	es Type ¹	Loc ²	Texture	Remarks
0-5	10YR 5/1	97		R 5/4	3	CS/C	M	Sand	Sand
5-8	10Y 4/1	97	10YI	R 5/4	3		M/PL	Clay	Clay
8-10	10YR 3/1	100	_		_			Peat	Fibric
10-12	10YR 3/4	100						Peat	Fibric
			· -			_=			
<u>12-18+</u>	10YR 2/1	100	· -					Mucky pe	at <u>Hernic</u>
								-	 -
1= 0.0									2
	oncentration, D=De Indicators: (Appli						ed Sand G		² Location: PL=Pore Lining, M=Matrix. cators for Problematic Hydric Soils ³ :
☐ Histosol				Sandy Redox (,,,,			2 cm Muck (A10)
	ipedon (A2)			Stripped Matrix					Red Parent Material (TF2)
☐ Black His				_oamy Mucky N	` '	1) (excep	MLRA 1)		/ery Shallow Dark Surface (TF12)
	n Sulfide (A4)			_oamy Gleyed			,		Other (Explain in Remarks)
	l Below Dark Surfa	ce (A11)		Depleted Matrix	-	_,			(2.,p.a (3)
	rk Surface (A12)	, ,		' Redox Dark Su	` '	i)		³ Indi	cators of hydrophytic vegetation and
	lucky Mineral (S1)			Depleted Dark	•	•			etland hydrology must be present,
	leyed Matrix (S4)		☐ F	Redox Depress	ions (F8))		u	nless disturbed or problematic.
_	Layer (if present):								
Type: Depth (in	ches):			-				l	
. ,	,	L	. 4 41	and the discount on Fig.	0.11		tale - a al-	•	Soil Present? Yes ☐ No ☒
	ind hydrology indica								re observed along old, dead root channels
and no wella	ina nyarology malo	ators were	ODSCIV	cu, suggesting	, tric sons	are exilib	ung rene m	yunc reature	
HYDROLO									
_	drology Indicators								
-	cators (minimum of	one requi	red; che						econdary Indicators (2 or more required)
	Water (A1)			☐ Water-Sta		, , ,	xcept MLI	RA L	Water-Stained Leaves (B9) (MLRA 1, 2,
	ter Table (A2)				A, and 4I	В)		_	4A, and 4B)
☐ Saturation	` '			☐ Salt Crust				<u> </u>	Drainage Patterns (B10)
☐ Water M	` '			☐ Aquatic In		` ,			Dry-Season Water Table (C2)
	t Deposits (B2)			Hydrogen		٠, ,			Saturation Visible on Aerial Imagery (C9)
-	osits (B3)			Oxidized F		_	_		Geomorphic Position (D2)
_	t or Crust (B4)			Presence		-	-		Shallow Aquitard (D3)
. –	osits (B5)			☐ Recent Iro			•	•	FAC-Neutral Test (D5)
	Soil Cracks (B6)			Stunted or		,	1) (LRR A)	Raised Ant Mounds (D6) (LRR A)
	on Visible on Aerial		,	☐ Other (Exp	olain in R	emarks)			Frost-Heave Hummocks (D7)
	Vegetated Concav	e Surface	(B8)						
Field Obser									
Surface Wat	er Present?	Yes 🗌	No 🛚	Depth (inche					
Water Table	Present?	Yes 🗌	No 🛚	Depth (inche	s):				
Saturation P (includes car		Yes 🗌	No 🛚	Depth (inche	s):		Wet	land Hydro	logy Present? Yes ☐ No ⊠
Describe Re	corded Data (strea	n gauge,	monitor	ing well, aerial	photos, p	orevious in	spections),	if available	:
	•	-					•		
Remarks: No	wetland hydrology	present;	only se	condary indica	tor D5 ob	served.			
İ									

Project/Site: 1042.0005 Ravensdale	(City/Coun	ty: <u>Ravensda</u>	ale/King	Sampling Date: 10-12-2017			
Applicant/Owner: Ravensdale LLC	Sampling Point: <u>DP-3</u>							
	Section, Township, Range: <u>01, 22N, 06E & 07E</u>							
Landform (hillslope, terrace, etc.): Channel		Local rel	ief (concave,	, convex, none): Concave	Slope (%): <u>0</u>			
Subregion (LRR): A2			*	•				
Soil Map Unit Name: Beausite gravelly sandy loam				_				
Are climatic / hydrologic conditions on the site typical for this								
Are Vegetation, Soil, or Hydrology sign	-		•					
Are Vegetation, Soil, or Hydrology natu				ed, explain any answers in				
SUMMARY OF FINDINGS – Attach site map					•			
Hydrophytic Vegetation Present? Yes ⊠ No □				<u> </u>	<u> </u>			
Hydric Soil Present? Yes ⊠ No □			he Sampled		_			
Wetland Hydrology Present? Yes ⊠ No □		wit	hin a Wetlar	nd? Yes⊠ No	o 📙			
Remarks: All three wetland criteria observed. Located in W	etland A.	·						
VEGETATION – Use scientific names of plant	to.							
VEGETATION – Use scientific flames of plant		Dominan	nt Indicator	Dominance Test works	sheet:			
Tree Stratum (Plot size: 30 ft)	% Cover			Number of Dominant Sp				
1. Thuja plicata	50	Yes	FAC	That Are OBL, FACW, o				
2. Alnus rubra			FAC	Total Number of Domina	ant			
3				Species Across All Strat	a: <u>4</u> (B)			
4				Percent of Dominant Sp				
Sapling/Shrub Stratum (Plot size: 15 ft)	90	= rotart	Cover	That Are OBL, FACW, o	or FAC: <u>100%</u> (A/B)			
1			<u> </u>	Prevalence Index work	sheet:			
2				Total % Cover of:	Multiply by:			
3			<u> </u>		x 1 =			
4		-		•	x 2 =			
5					x 3 =			
Herb Stratum (Plot size: 5 ft)	0	= Lotal (Cover		x 4 = x 5 =			
1. Athyrium cyclosorum	10	Yes	FAC		(A) (B)			
2. Carex obnupta	10	Yes	OBL	Gordinii Fotale.	(*,) (5)			
3			<u> </u>		= B/A =			
4				Hydrophytic Vegetation				
5				Rapid Test for Hydro				
6				☑ Dominance Test is >☐ Prevalence Index is				
7				_	≤3.0 tations¹ (Provide supporting			
8					or on a separate sheet)			
9 10				☐ Wetland Non-Vascul	lar Plants ¹			
11.				☐ Problematic Hydroph	hytic Vegetation¹ (Explain)			
	20			¹ Indicators of hydric soil be present, unless distu	and wetland hydrology must			
Woody Vine Stratum (Plot size: 30 ft)				be present, unless distu	bed of problematic.			
1			· <u></u>	Hydrophytic				
2				Vegetation	s⊠ No □			
% Bare Ground in Herb Stratum <u>80</u>	0	= Total (Cover	Fresent? Tes				
Remarks: Hydrophytic vegetation criteria observed through	n dominance	e test.		1				

Profile Desc	ription: (Describ	e to the c	lepth ne	eded to docu	ment the	indicator	or confirn	n the abs	sence	of indicators.)
Depth (inches)	Matrix Color (moist)	%	Colo	Redo	x Feature		1.002	Toyetur	_	Domorko
(inches)			COIO	i (IIIOISI)	%	Type ¹	Loc ²	Texture	<u>e</u>	Remarks
0-10	10YR 2/1	<u>50</u>				_=		SiCILo		Silty Clay Loam/ Mixed matrix
<u>-</u>	10YR 3/1	<u>50</u>			_=	_=		SiCILo		Silty Clay Loam/Mixed matrix
<u>10-16</u>	<u>5Y 5/1</u>	<u>85</u>	<u>10YI</u>	R 4/6	15	<u>C</u>	M/PL	SaLo		Fine Sandy Loam
		_								
					_					
		_								
	oncentration, D=De						ed Sand G			cation: PL=Pore Lining, M=Matrix.
_	Indicators: (Appl	cable to				ted.)				ors for Problematic Hydric Soils ³ :
Histosol	(A1) ipedon (A2)			Sandy Redox (S Stripped Matrix				_		n Muck (A10) Parent Material (TF2)
☐ Black Hi				_oamy Mucky N	` '	1) (evcen	· MI RA 1)			shallow Dark Surface (TF12)
	n Sulfide (A4)			_oamy Gleyed I			· ····E·····			er (Explain in Remarks)
	l Below Dark Surfa	ce (A11)		Depleted Matrix		-,			, 0	(Exprain in ternainte)
	rk Surface (A12)	,		Redox Dark Sui)		³ lr	ndicato	ors of hydrophytic vegetation and
☐ Sandy M	lucky Mineral (S1)			Depleted Dark S	Surface (F	- 7)			wetla	nd hydrology must be present,
	leyed Matrix (S4)			Redox Depress	ions (F8)				unles	s disturbed or problematic.
	Layer (if present):									
Type:	-h \.			-						
Depth (in	,							Hydri	c Soil	Present? Yes ⊠ No □
Remarks: Hy	dric soil criteria me	et through	indicato	ors A11 and F3.	-					
HYDROLO	GY									
Wetland Hy	drology Indicators	s:								
_	cators (minimum of		ired: che	eck all that appl	lv)				Seco	ndary Indicators (2 or more required)
	Water (A1)			☐ Water-Stai		es (B9) (e	xcept MLF	RA		/ater-Stained Leaves (B9) (MLRA 1, 2,
	ter Table (A2)				A, and 4E				ш	4A, and 4B)
☐ Saturation				□ Salt Crust	•	,			Πр	rainage Patterns (B10)
	arks (B1)			☐ Aquatic Inv	` '	es (B13)				ry-Season Water Table (C2)
	t Deposits (B2)			 ☐ Hydrogen		` '				aturation Visible on Aerial Imagery (C9)
	osits (B3)			Oxidized F			Living Roo	ts (C3)		eomorphic Position (D2)
	t or Crust (B4)			☐ Presence		_	-	, ,	□ s	hallow Aquitard (D3)
_	osits (B5)			☐ Recent Iro		•	•	i)	☐ F/	AC-Neutral Test (D5)
	Soil Cracks (B6)			☐ Stunted or	Stressed	Plants (D	1) (LRR A))	□R	aised Ant Mounds (D6) (LRR A)
☐ Inundation	on Visible on Aerial	Imagery	(B7)	☐ Other (Exp	olain in Re	emarks)			☐ Fi	rost-Heave Hummocks (D7)
☐ Sparsely	Vegetated Concav	e Surfac	e (B8)							
Field Obser	vations:									
Surface Wat	er Present?	Yes 🗌	No 🛛	Depth (inches	s):					
Water Table	Present?	Yes 🗌	No 🛛	Depth (inches	s):					
Saturation P	resent?	Yes 🗌	No 🛛	Depth (inches	s):		Wetl	and Hyd	Irolog	y Present? Yes ⊠ No □
(includes ca	oillary fringe)				·					
Describe Re	corded Data (strea	m gauge,	monitor	ing well, aerial	pnotos, p	revious in	spections),	ıt availal	ole:	
				, , ,		150				
Remarks: Hy	/drologic criteria ob	served th	rough s	econdary indica	ators C9 a	ind D2.				

Project/Site: 1042.0005 Ravensdale	(City/County	y: <u>Ravensda</u>	ale/King	Sampling Date: 10-12-2017				
Applicant/Owner: Ravensdale LLC State: WA Sampling Point:									
Investigator(s): Richard Peel, Emily Swaim			Section, To	ownship, Range: <u>01, 22N, (</u>	06E & 07E				
Landform (hillslope, terrace, etc.): Plateau		Local relie	ef (concave,	convex, none): None	Slope (%): <u>0</u>				
Subregion (LRR): A2			•	*					
Soil Map Unit Name: Beausite gravelly sandy loam				-					
Are climatic / hydrologic conditions on the site typical for this									
Are Vegetation, Soil, or Hydrology sign	-		•		ent? Yes⊠ No□				
Are Vegetation, Soil, or Hydrology natu				ed, explain any answers in					
SUMMARY OF FINDINGS – Attach site map					•				
Attach site map	3110 Willig		g point it	- Cations, transcots,	important reatures, etc.				
Hydrophytic Vegetation Present? Yes ⊠ No ☐		Is th	e Sampled	Area					
Hydric Soil Present? Yes ☐ No ☐ Wetland Hydrology Present? Yes ☐ No ☐		with	in a Wetlar	nd? Yes ☐ No	o 🛛				
Remarks: Not all three wetland criteria observed; only hydronic states and criteria observed.	ophytic veg	etation crit	eria observe	ed Located in Trench F					
	-p, 10g								
VEGETATION – Use scientific names of plant	ts.								
	Absolute			Dominance Test works	heet:				
Tree Stratum (Plot size: 30 ft) 1	% Cover			Number of Dominant Sports That Are OBL, FACW, or					
2				Total Number of Domina	ant				
3				Species Across All Strata	a: <u>5</u> (B)				
4				Percent of Dominant Spe	ecies				
Sapling/Shrub Stratum (Plot size: 15 ft)	0	= Total C	over	That Are OBL, FACW, or	r FAC: <u>80%</u> (A/B)				
1. Rubus spectabilis	10	Yes	FAC	Prevalence Index work	sheet:				
2. Rubus laciniatus	5	Yes	FACU	Total % Cover of:	Multiply by:				
3. Rubus armeniacus	5	Yes	FAC	OBL species	x 1 =				
4				· ·	x 2 =				
5					x 3 =				
Herb Stratum (Plot size: 5 ft)	<u>20</u>	= Total C	over		x 4 =				
1. Epilobium ciliatum	10	Yes	FAC		x 5 = (A) (B)				
2. Geum macrophyllum	10		FAC	Column Totals.	(A) (B)				
3. Plantago major	5	Yes	FAC	Prevalence Index	= B/A =				
4				Hydrophytic Vegetation					
5				Rapid Test for Hydro	· ·				
6				□ Dominance Test is > □ □ Dominance Test is > □ D					
7				☐ Prevalence Index is:	≤3.01 tations¹ (Provide supporting				
8					or on a separate sheet)				
9				☐ Wetland Non-Vascul	ar Plants¹				
10				☐ Problematic Hydroph	nytic Vegetation¹ (Explain)				
11	25				and wetland hydrology must				
Woody Vine Stratum (Plot size: 30 ft)				be present, unless distur	bed or problematic.				
1				Hydrophytic					
2				Vegetation	.				
% Bare Ground in Herb Stratum 75	0	= Total C	over	Present? Yes	No 🗌				
Remarks: Hydrophytic vegetation criteria observed through	n dominance	e test.		1					
3									

Profile Desc	ription: (Describ	e to the c	lepth ne	eded to docui	ment the	indicator	or confirn	n the abs	ence	of indicators.)
Depth	Matrix	0/			<u>x Feature</u>		. 2	- .		B
(inches)	Color (moist)	<u>%</u>	Colo	r (moist)	%	Type ¹	Loc ²	_Texture	<u> </u>	Remarks Remarks
<u>0-16</u>	7.5YR 3/2	<u>46</u>	7.5Y	R 4/6	3	<u>C</u>	<u>M</u>	SiCILo		Silt Clay Loam- mixed matrix
	10Y 5/1	46	7.5Y	R 4/6	5	<u>C</u>	M	GrSiCIL	0	Gravelly Silt Clay Loam- mixed matrix
		_			_			-		
	-				_					-
			_							
		_								
¹ Type: C=Ce	oncentration, D=De	epletion, F	RM=Red	uced Matrix, CS	S=Covere	ed or Coat	ed Sand Gi	rains.	² Loc	cation: PL=Pore Lining, M=Matrix.
	Indicators: (Appl									ors for Problematic Hydric Soils ³ :
☐ Histosol	(A1)			Sandy Redox (S	S5)				2 cm	Muck (A10)
-	ipedon (A2)			Stripped Matrix	` '					Parent Material (TF2)
☐ Black His	` '			₋oamy Mucky N	•		t MLRA 1)			Shallow Dark Surface (TF12)
	n Sulfide (A4)			oamy Gleyed I		2)			Othe	er (Explain in Remarks)
	Below Dark Surfa	ce (A11)		Depleted Matrix				2.		
	rk Surface (A12)			Redox Dark Su	, ,					ors of hydrophytic vegetation and
_	lucky Mineral (S1)			Depleted Dark S Redox Depress	•	-7)				nd hydrology must be present, ss disturbed or problematic.
	leyed Matrix (S4) Layer (if present):			Redox Depress	ions (Fo)				unies	s disturbed of problematic.
Type:	Layer (ii present).									
Depth (in				-				Hydrid	انمی د	Present? Yes ☐ No ☒
. `	,	ahaam (aa	I A miss	ad matrix was n	rocent wi	th anal da	naaita	riyuric	, 3011	Tresent: Tes 🗌 No 🖂
Remarks. No	hydric soil criteria	observed	I. A IIIIXE	ed matrix was p	resent wi	ın coai de	posits.			
HYDROLO	GY									
Wetland Hy	drology Indicators	<u> </u>								
_	cators (minimum of		ired: che	eck all that appl	lv)				Seco	ndary Indicators (2 or more required)
	Water (A1)	0.10 1040		☐ Water-Stai		res (B9) (e	xcent MI F			ater-Stained Leaves (B9) (MLRA 1, 2,
	ter Table (A2)				A, and 4E		xoopt iii_i		ш ••	4A, and 4B)
☐ Saturation				☐ Salt Crust	,	-,		ı	Пρ	rainage Patterns (B10)
☐ Water Ma	` '			Aquatic Inv	` '	es (B13)				ry-Season Water Table (C2)
	t Deposits (B2)			☐ Hydrogen		` '				aturation Visible on Aerial Imagery (C9)
	osits (B3)			☐ Oxidized F			Living Roo	its (C3)		eomorphic Position (D2)
	t or Crust (B4)			☐ Presence of		_	_	10 (00)		hallow Aquitard (D3)
_	osits (B5)			☐ Recent Iro		•	•	3)		AC-Neutral Test (D5)
-	Soil Cracks (B6)			☐ Stunted or			,	•		aised Ant Mounds (D6) (LRR A)
	on Visible on Aerial	Imagery	(B7)	Other (Exp		•	., (=::::7:,	,		rost-Heave Hummocks (D7)
	Vegetated Concav					,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		'		(2.)
Field Obser			()							
Surface Wat		Yes 🗌	No 🛛	Depth (inches	s):					
Water Table			No 🖾	Depth (inches						
Saturation P			No 🖾	Depth (inches			Wetl	and Hvd	rolog	y Present? Yes □ No ⊠
(includes car	oillary fringe)							-	_	,
Describe Re	corded Data (strea	m gauge,	monitor	ing well, aerial	photos, p	revious in	spections),	if availab	le:	
Remarks: No	hydrologic criteria	observed	d.							

Project/Site: 1042.0005 Ravensdale		City/County	ale/King	Sampling Date: <u>10-12-2017</u>			
Applicant/Owner: Ravensdale LLC	State: WA Sampling Point: D						
Investigator(s): Richard Peel, Emily Swaim			Section, To	ownship, Range: <u>01, 22N,</u>	06E & 07E		
Landform (hillslope, terrace, etc.): Depression		Local relie	ef (concave	, convex, none): Concave	Slope (%): 2		
Subregion (LRR): A2	_ Lat: 47.3	3417839		Long: -121.97703646	Datum: WGS 84		
Soil Map Unit Name: <u>Beausite gravelly sandy loam</u>							
Are climatic / hydrologic conditions on the site typical for this							
Are Vegetation, Soil, or Hydrology sign	-		· ·	ormal Circumstances" pres			
Are Vegetation, Soil, or Hydrology natu				ed, explain any answers in	- -		
SUMMARY OF FINDINGS – Attach site map			•		•		
Hydrophytia Vagetation Procent2					<u> </u>		
Hydrophytic Vegetation Present? Yes ⊠ No ☐ Hydric Soil Present? Yes ⊠ No ☐			e Sampled				
Wetland Hydrology Present? Yes ⊠ No □		with	in a Wetlar	nd? Yes⊠ N	0 🗆		
Remarks: All three wetland criteria observed. Located in W	/etland B.						
VEGETATION – Use scientific names of plan	ts.						
Tree Stratum (Plot size: 30 ft)	Absolute % Cover			Dominance Test works			
1. Alnus rubra				Number of Dominant Sp That Are OBL, FACW, o	pecies or FAC: <u>3</u> (A)		
Pseudostuga menziesii							
3				Total Number of Domina Species Across All Strat			
4				Percent of Dominant Sp			
0 1 10 10 1 10 1 15 (0)	30	= Total C	over		or FAC: <u>100%</u> (A/B)		
Sapling/Shrub Stratum (Plot size: 15 ft)	15	Voc	EAC\\\	Prevalence Index work	rshoot:		
Spiraea douglasii Acer circinatum					Multiply by:		
3					x 1 =		
4.					x 2 =		
5				FAC species	x 3 =		
		= Total C		FACU species	x 4 =		
Herb Stratum (Plot size: <u>5 ft</u>)				UPL species	x 5 =		
1. Carex obnupta	<u>15</u>			Column Totals:	(A) (B)		
2				Prevalence Index	= B/A =		
3				Hydrophytic Vegetatio			
5				☐ Rapid Test for Hydro			
6.					• •		
7				☐ Prevalence Index is	≤3.0 ¹		
8.					tations ¹ (Provide supporting		
9				data in Remarks ☐ Wetland Non-Vascu	or on a separate sheet)		
10				_	nar Plants [.] hytic Vegetation ¹ (Explain)		
11				-	and wetland hydrology must		
Woody Vine Stratum (Plot size: 30 ft)	15	= Total C	over	be present, unless distu			
1				Hadran C			
2				Hydrophytic Vegetation			
		= Total C	over		s⊠ No □		
% Bare Ground in Herb Stratum Remarks: Hydrophytic vegetation criteria met through rapi	d and domin	anco toot					
тетнать. пучторнуще vegetation criteria met tirough rapi	u anu uomin	ianice lest.					

Depth	scription: (Describ Matrix	(-	Red	ox Featu					•	
(inches)	Color (moist)	%	Colo	r (moist)	%	Type ¹	Loc ²	Textur	<u>e</u> _	Remarks	
0-9	2.5Y 3/1	100						SiLo		Silt Loam	
9-16	2.5Y 5/2	97	10YI	R 5/8	3	С	M	SiLo			
								·			
	-	·						-			
_								·			_
1Typo: C=0	Concentration, D=D	lonlotion	DM-Pod	ucod Matrix C	`S=Cover	od or Coat	od Sand G	raine	21.00	ation: PL=Pore Lining	n M-Matrix
	I Indicators: (App						eu Sanu G			rs for Problematic H	
☐ Histoso				Sandy Redox (,				Muck (A10)	,
	pipedon (A2)			Stripped Matrix						Parent Material (TF2)	
	listic (A3)		_	_oamy Mucky	` '	-1) (excep	t MLRA 1)			Shallow Dark Surface	(TF12)
	en Sulfide (A4)			₋oamy Gleyed			,		•	r (Explain in Remarks	` ,
□ Deplete	ed Below Dark Surfa	ace (A11)		Depleted Matri	x (F3)						
	ark Surface (A12)			Redox Dark Su	•	•		³ lr		rs of hydrophytic vege	
-	Mucky Mineral (S1)			Depleted Dark		. ,				nd hydrology must be	
	Gleyed Matrix (S4)			Redox Depres	sions (F8)		1	unles	s disturbed or problem	atic.
	Layer (if present)										
Type:	nches):							1			
Deptii (ii	ncnes)							Hydri	c Soil	Present? Yes	No ⊠
IYDROLO	DGY										
Wetland Hy	ydrology Indicator										
Wetland Hy			uired; cho	• • • • • • • • • • • • • • • • • • • •					Secon	dary Indicators (2 or r	nore required)
Wetland Hy Primary Ind Surface	ydrology Indicator licators (minimum c water (A1)		uired; ch	☐ Water-Sta	ained Lea	. , .	xcept MLF	RA		ater-Stained Leaves (I	
Wetland Hy Primary Ind ☐ Surface ☐ High W	ydrology Indicator licators (minimum c Water (A1) ater Table (A2)		uired; cho	☐ Water-Sta	ained Lea	. , .	except MLF	RA A	⊠ W	ater-Stained Leaves (I	B9) (MLRA 1, 2,
Wetland Hy Primary Ind ☐ Surface ☐ High Wi ☐ Saturati	ydrology Indicator licators (minimum o Water (A1) ater Table (A2) ion (A3)		uired; cho	☐ Water-Sta 1, 2, 4 ☐ Salt Crus	ained Lea I A, and 4 t (B11)	В)	except MLF	RA	⊠ W	ater-Stained Leaves (I 4A, and 4B) ainage Patterns (B10)	39) (MLRA 1, 2,
Wetland Hy Primary Ind □ Surface □ High Wa □ Saturati □ Water M	ydrology Indicator licators (minimum of Water (A1) ater Table (A2) ion (A3) Marks (B1)		uired; cho	☐ Water-Sta 1, 2, 4 ☐ Salt Crus ☐ Aquatic Ir	ained Lea IA, and 4 t (B11) nvertebrat	B) tes (B13)	except MLF	RA	⊠ W	ater-Stained Leaves (I 4A, and 4B) ainage Patterns (B10) y-Season Water Table	39) (MLRA 1, 2,
Wetland Hy Primary Ind ☐ Surface ☐ High W: ☐ Saturati ☐ Water N ☐ Sedime	ydrology Indicator licators (minimum of Water (A1) ater Table (A2) ion (A3) Marks (B1) ent Deposits (B2)		uired; ch	☐ Water-Sta 1, 2, 4 ☐ Salt Crus ☐ Aquatic Ir ☐ Hydrogen	ained Lea IA, and 4 t (B11) nvertebrat Sulfide (es (B13) Odor (C1)	·		☑ W	ater-Stained Leaves (I 4A, and 4B) ainage Patterns (B10) y-Season Water Table turation Visible on Ae	B9) (MLRA 1, 2, e (C2) rial Imagery (C9)
Wetland Hy Primary Ind □ Surface □ High W: □ Saturati □ Water N □ Sedime □ Drift De	ydrology Indicator licators (minimum of Water (A1) ater Table (A2) ion (A3) Marks (B1) ent Deposits (B2)		uired; ch	Water-Sta 1, 2, 4 Salt Crus Aquatic Ir Hydrogen Oxidized	ained Lea IA, and 4 t (B11) nvertebrat Sulfide C Rhizosph	tes (B13) Odor (C1) eres along	Living Roo		WDrDrDrSa⊠Ge	ater-Stained Leaves (I 4A, and 4B) ainage Patterns (B10) y-Season Water Table turation Visible on Ae comorphic Position (D	B9) (MLRA 1, 2, e (C2) rial Imagery (C9)
Wetland Hy Primary Ind Surface High Wa Saturati Water M Sedime Drift De Algal M	ydrology Indicator licators (minimum of Water (A1) ater Table (A2) ion (A3) Marks (B1) ent Deposits (B2) eposits (B3) at or Crust (B4)		uired; cho	Water-State 1, 2, 4 Salt Cruss Aquatic Ir Hydrogen Oxidized Presence	ained Lea IA, and 4 t (B11) nvertebrat Sulfide (Rhizosph of Reduc	es (B13) Odor (C1) eres along ced Iron (C	Living Roo 4)	ots (C3)	☐ Dr ☐ Dr ☐ Sa ☐ St	ater-Stained Leaves (I 4A, and 4B) ainage Patterns (B10) y-Season Water Table attration Visible on Ae comorphic Position (Da allow Aquitard (D3)	B9) (MLRA 1, 2, e (C2) rial Imagery (C9)
Wetland Hy Primary Ind Surface High Water M Sedime Drift De Algal M Iron De	ydrology Indicator licators (minimum of Water (A1) ater Table (A2) ion (A3) Marks (B1) ent Deposits (B2) eposits (B3) at or Crust (B4) posits (B5)		uired; cho	Water-Sta 1, 2, 4 Salt Crus Aquatic Ir Hydrogen Oxidized Presence Recent Ire	ained Lea IA, and 4 t (B11) nvertebrat Sulfide (Rhizosph of Reduc	es (B13) Odor (C1) eres along ced Iron (C- tion in Tille	Living Roo 4) d Soils (C6	ots (C3)	Dr Dr Sa Ge	ater-Stained Leaves (I 4A, and 4B) ainage Patterns (B10) y-Season Water Table attration Visible on Ae ecomorphic Position (Di allow Aquitard (D3) ac-Neutral Test (D5)	39) (MLRA 1, 2, e (C2) rial Imagery (C9)
Wetland Hy Primary Ind Surface High Water M Sedime Drift De Algal M Iron De Surface	ydrology Indicator licators (minimum of Water (A1) ater Table (A2) ion (A3) Marks (B1) ent Deposits (B2) eposits (B3) at or Crust (B4) posits (B5) e Soil Cracks (B6)	of one req		Water-Sta 1, 2, 4 Salt Crus Aquatic Ir Hydrogen Oxidized Presence Recent Ire Stunted o	ained Lea IA, and 4 t (B11) nvertebrat Sulfide (Rhizosph of Reduct on Reduct r Stresse	des (B13) Ddor (C1) eres along ded Iron (C- tion in Tille d Plants (C	Living Roo 4)	ots (C3)	Dr Dr Sa GG St FA	ater-Stained Leaves (I 4A, and 4B) ainage Patterns (B10) y-Season Water Table aturation Visible on Ae ecomorphic Position (D3) allow Aquitard (D3) ac-Neutral Test (D5) aised Ant Mounds (D6)	39) (MLRA 1, 2, e (C2) rial Imagery (C9) 2)
Wetland Hy Primary Ind Surface High Water N Sedime Drift De Algal M Iron De Surface Inundat	ydrology Indicator licators (minimum of Water (A1) ater Table (A2) ion (A3) Marks (B1) ent Deposits (B2) eposits (B3) at or Crust (B4) posits (B5) e Soil Cracks (B6) ion Visible on Aeria	of one req	/ (B7)	Water-Sta 1, 2, 4 Salt Crus Aquatic Ir Hydrogen Oxidized Presence Recent Ire	ained Lea IA, and 4 t (B11) nvertebrat Sulfide (Rhizosph of Reduct on Reduct r Stresse	des (B13) Ddor (C1) eres along ded Iron (C- tion in Tille d Plants (C	Living Roo 4) d Soils (C6	ots (C3)	Dr Dr Sa GG St FA	ater-Stained Leaves (I 4A, and 4B) ainage Patterns (B10) y-Season Water Table attration Visible on Ae ecomorphic Position (Di allow Aquitard (D3) ac-Neutral Test (D5)	39) (MLRA 1, 2, e (C2) rial Imagery (C9) 2)
Wetland Hy Primary Ind Surface High Wall Saturati Water Mall Sedime Drift De Algal M Iron De Surface Inundat Sparsel	ydrology Indicator licators (minimum of Water (A1) ater Table (A2) ion (A3) Marks (B1) ent Deposits (B2) eposits (B3) at or Crust (B4) posits (B5) e Soil Cracks (B6) ion Visible on Aeria ly Vegetated Conca	of one req	/ (B7)	Water-Sta 1, 2, 4 Salt Crus Aquatic Ir Hydrogen Oxidized Presence Recent Ire Stunted o	ained Lea IA, and 4 t (B11) nvertebrat Sulfide (Rhizosph of Reduct on Reduct r Stresse	des (B13) Ddor (C1) eres along ded Iron (C- tion in Tille d Plants (C	Living Roo 4) d Soils (C6	ots (C3)	Dr Dr Sa GG St FA	ater-Stained Leaves (I 4A, and 4B) ainage Patterns (B10) y-Season Water Table aturation Visible on Ae ecomorphic Position (D3) allow Aquitard (D3) ac-Neutral Test (D5) aised Ant Mounds (D6)	39) (MLRA 1, 2, e (C2) rial Imagery (C9) 2)
Wetland Hy Primary Ind Surface High Water Market Sedime Drift De Algal MInon De Surface Inundat Sparsel	ydrology Indicator licators (minimum of Water (A1) ater Table (A2) ion (A3) Marks (B1) ent Deposits (B2) eposits (B3) at or Crust (B4) posits (B5) e Soil Cracks (B6) ion Visible on Aeria ly Vegetated Concae ervations:	of one req	/ (B7) ce (B8)	Water-Sta 1, 2, 4 I, 2, 4 Salt Crus Aquatic Ir Hydrogen Oxidized Presence Recent Ire Stunted o Other (Ex	ained Lea IA, and 4 t (B11) overtebrat Sulfide (Rhizosph of Reduct on Reduct on Reduct or Stresse plain in R	es (B13) Odor (C1) eres along ced Iron (Cition in Tille d Plants (Citemarks)	Living Roo 4) d Soils (C6	ots (C3)	Dr Dr Sa GG St FA	ater-Stained Leaves (I 4A, and 4B) ainage Patterns (B10) y-Season Water Table aturation Visible on Ae ecomorphic Position (D3) allow Aquitard (D3) ac-Neutral Test (D5) aised Ant Mounds (D6)	39) (MLRA 1, 2, e (C2) rial Imagery (C9) 2)
Wetland Hy Primary Ind Surface High Water M Sedime Drift De Algal M Iron De Surface Inundat Sparsel Field Obse	ydrology Indicator licators (minimum of Water (A1) ater Table (A2) ion (A3) Marks (B1) ent Deposits (B2) eposits (B3) at or Crust (B4) posits (B5) e Soil Cracks (B6) ion Visible on Aeria ly Vegetated Concaurvations: ater Present?	of one required in the second of the second	/ (B7) ce (B8)	Water-Sta 1, 2, 4 Salt Crus Aquatic Ir Hydrogen Oxidized Presence Recent Ir Stunted o Other (Ex	ained Lea JA, and 4 t (B11) nvertebrat Sulfide (Rhizosph of Reduct on Reduct or Stresse cplain in R	des (B13) Ddor (C1) eres along ded Iron (C- tion in Tille d Plants (C- demarks)	Living Roo 4) d Soils (C6	ots (C3)	Dr Dr Sa GG St FA	ater-Stained Leaves (I 4A, and 4B) ainage Patterns (B10) y-Season Water Table aturation Visible on Ae ecomorphic Position (D3) allow Aquitard (D3) ac-Neutral Test (D5) aised Ant Mounds (D6)	39) (MLRA 1, 2, e (C2) rial Imagery (C9) 2)
Wetland Hy Primary Ind Surface High Water Market Sedime Drift De Algal MInon De Surface Inundat Sparsel	ydrology Indicator licators (minimum of Water (A1) ater Table (A2) ion (A3) Marks (B1) ent Deposits (B2) eposits (B3) at or Crust (B4) posits (B5) e Soil Cracks (B6) ion Visible on Aeria ly Vegetated Concaurvations: ater Present?	of one requal Imagery ave Surface Yes □ Yes □	/ (B7) ce (B8) No ⊠ No ⊠	Water-Sta 1, 2, 4 Salt Crus Aquatic Ir Hydrogen Oxidized Presence Recent Ir Stunted o Other (Ex	ained Lea IA, and 4 I (B11) Invertebrat I Sulfide (I) Rhizosph of Reduct I Stresse I Stress	tes (B13) Odor (C1) eres along ced Iron (C tion in Tille d Plants (C temarks)	Living Roo 4) d Soils (C6 11) (LRR A	ots (C3)	☐ Dr ☐ Dr ☐ Sa ☐ Ge ☐ Sr ☐ Fr	ater-Stained Leaves (I 4A, and 4B) ainage Patterns (B10) y-Season Water Table aturation Visible on Ae comorphic Position (Di allow Aquitard (D3) aC-Neutral Test (D5) aised Ant Mounds (D6) ost-Heave Hummocks	39) (MLRA 1, 2, e (C2) rial Imagery (C9) 2)) (LRR A) (D7)
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Wetland Hy Primary Ind Surface High Water N Sedime Drift De Algal M Iron De Iron De Inundat Sparsel Field Obse Surface Water Table Saturation I (includes ca	ydrology Indicator licators (minimum of Water (A1) ater Table (A2) ion (A3) Marks (B1) ent Deposits (B2) eposits (B3) at or Crust (B4) posits (B5) e Soil Cracks (B6) ion Visible on Aeria ly Vegetated Conca- ervations: ater Present? e Present? present? apillary fringe)	al Imagery ave Surface Yes Yes Yes Yes Yes	/ (B7) ce (B8) No ⊠ No ⊠ No ⊠	Water-Sta 1, 2, 4 Salt Crus Aquatic Ir Hydrogen Oxidized Presence Recent Ir Stunted o Other (Ex	ained Lea JA, and 4 t (B11) nvertebrat Sulfide (Rhizosph of Reduct on Reduct or Stresse cplain in R es): es):	tes (B13) Odor (C1) eres along ced Iron (C- tion in Tille d Plants (C- emarks)	Living Roo 4) d Soils (C6 1) (LRR A	ots (C3)	□ Dr □ Dr □ Sa □ Ge □ St □ FA	ater-Stained Leaves (I 4A, and 4B) ainage Patterns (B10) y-Season Water Table aturation Visible on Ae comorphic Position (Di allow Aquitard (D3) aC-Neutral Test (D5) aised Ant Mounds (D6) ost-Heave Hummocks	39) (MLRA 1, 2, e (C2) rial Imagery (C9) 2)) (LRR A) (D7)
Wetland Hy Primary Ind Surface High Water Mater Table Saturation Feincludes ca	ydrology Indicator licators (minimum of Water (A1) ater Table (A2) ion (A3) Marks (B1) ent Deposits (B2) eposits (B3) at or Crust (B4) posits (B5) e Soil Cracks (B6) ion Visible on Aeria ly Vegetated Conca ervations: ater Present? e Present?	al Imagery ave Surface Yes Yes Yes Yes Yes	/ (B7) ce (B8) No ⊠ No ⊠ No ⊠	Water-Sta 1, 2, 4 Salt Crus Aquatic Ir Hydrogen Oxidized Presence Recent Ir Stunted o Other (Ex	ained Lea JA, and 4 t (B11) nvertebrat Sulfide (Rhizosph of Reduct on Reduct or Stresse cplain in R es): es):	tes (B13) Odor (C1) eres along ced Iron (C- tion in Tille d Plants (C- emarks)	Living Roo 4) d Soils (C6 1) (LRR A	ots (C3)	□ Dr □ Dr □ Sa □ Ge □ St □ FA	ater-Stained Leaves (I 4A, and 4B) ainage Patterns (B10) y-Season Water Table aturation Visible on Ae comorphic Position (Di allow Aquitard (D3) aC-Neutral Test (D5) aised Ant Mounds (D6) ost-Heave Hummocks	39) (MLRA 1, 2, e (C2) rial Imagery (C9) 2)) (LRR A) (D7)
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Wetland Hy Primary Ind Surface High Water Mater Table Saturation Mater M	ydrology Indicator licators (minimum of Water (A1) ater Table (A2) ion (A3) Marks (B1) ent Deposits (B2) eposits (B3) at or Crust (B4) posits (B5) e Soil Cracks (B6) ion Visible on Aeria ly Vegetated Conca- ervations: ater Present? e Present? present? apillary fringe)	al Imagery ave Surface Yes Yes Yes am gauge	/ (B7) ce (B8) No ⊠ No ⊠ No ⊠	Water-Sta 1, 2, 4 Salt Crus Aquatic Ir Hydrogen Oxidized Presence Recent Ir Stunted o Other (Ex Depth (inche Depth (inche Depth (inche	ained Lea JA, and 4 t (B11) nvertebrat Sulfide (Rhizosph of Reduc on Reduc on Reduc or Stresse plain in R es): es): I photos,	tes (B13) Ddor (C1) eres along ced Iron (Cation in Tille d Plants (Catemarks)	Living Roo 4) d Soils (C6 1) (LRR A Wetl	its (C3) i) and Hyd if availal	□ Dr □ Dr □ Sa □ Sr □ Sr □ Fr □ Fr	ater-Stained Leaves (I 4A, and 4B) ainage Patterns (B10) y-Season Water Table aturation Visible on Ae ecomorphic Position (Di allow Aquitard (D3) aC-Neutral Test (D5) aised Ant Mounds (D6 bost-Heave Hummocks	39) (MLRA 1, 2, e (C2) rial Imagery (C9) 2)) (LRR A) (D7)
Wetland Hy Primary Ind Surface High Water N Sedime Drift De Algal M Iron De Surface Inundat Sparsel Field Obse Surface Water Table Saturation F (includes cap	ydrology Indicator licators (minimum of Water (A1) ater Table (A2) ion (A3) Marks (B1) ent Deposits (B2) eposits (B3) at or Crust (B4) posits (B5) e Soil Cracks (B6) ion Visible on Aeria ly Vegetated Concae ervations: ater Present? e Present? Present? apillary fringe) ecorded Data (streat	al Imagery ave Surface Yes Yes Yes am gauge	/ (B7) ce (B8) No ⊠ No ⊠ No ⊠	Water-Sta 1, 2, 4 Salt Crus Aquatic Ir Hydrogen Oxidized Presence Recent Ir Stunted o Other (Ex Depth (inche Depth (inche Depth (inche	ained Lea JA, and 4 t (B11) nvertebrat Sulfide (Rhizosph of Reduc on Reduc on Reduc or Stresse plain in R es): es): I photos,	tes (B13) Ddor (C1) eres along ced Iron (Cation in Tille d Plants (Catemarks)	Living Roo 4) d Soils (C6 1) (LRR A Wetl	its (C3) i) and Hyd if availal	□ Dr □ Dr □ Sa □ Sr □ Sr □ Fr □ Fr	ater-Stained Leaves (I 4A, and 4B) ainage Patterns (B10) y-Season Water Table aturation Visible on Ae ecomorphic Position (Di allow Aquitard (D3) aC-Neutral Test (D5) aised Ant Mounds (D6 bost-Heave Hummocks	B9) (MLRA 1, 2, e (C2) rial Imagery (C9) 2)) (LRR A) (D7)

Project/Site: 1042.0005 Ravensdale		City/Count	y: <u>Ravensd</u>	ale/King	Sampling Date: 10-13-2017		
Applicant/Owner: Ravensdale LLC	State: <u>WA</u> Sampling Point						
Investigator(s): Richard Peel, Emily Swaim			Section, To	ownship, Range: <u>01, 22N,</u>	06E & 07E		
Landform (hillslope, terrace, etc.): Hillslope		Local reli	ef (concave	, convex, none): None	Slope (%): <u>35</u>		
Subregion (LRR): A2	_ Lat: <u>47.3</u>	3478896		Long: <u>-121.97663477</u>	Datum: WGS 84		
Soil Map Unit Name: Beausite gravelly sandy loam				NWI classifica	tion: N/A		
Are climatic / hydrologic conditions on the site typical for this							
Are Vegetation, Soil, or Hydrology sign	nificantly dis	turbed?	Are "No	ormal Circumstances" pres	sent? Yes ⊠ No □		
Are Vegetation, Soil, or Hydrology natu			(If need	ed, explain any answers ir	Remarks.)		
SUMMARY OF FINDINGS – Attach site map			g point l	ocations, transects,	important features, etc.		
Hydrophytic Vegetation Present? Yes ☐ No ☒							
Hydric Soil Present? Yes ☐ No ☒			ne Sampled		- 57		
Wetland Hydrology Present? Yes ☐ No ☒		with	nin a Wetlaı	nd? Yes □ N	0 🔯		
Remarks: No wetland criteria observed. Located near Trer	nch F.						
VEGETATION – Use scientific names of plan	ts.						
Tree Stratum (Plot size: 30 ft)	Absolute <u>% Cover</u>		Indicator Status	Dominance Test works			
1. Acer macrophyllum		•		Number of Dominant Sp That Are OBL, FACW, o	ecies r FAC: <u>1</u> (A)		
Pseudostuga menziesii				Total Number of Domina			
3				Species Across All Strat			
4				Percent of Dominant Sp	eries		
Sapling/Shrub Stratum (Plot size: 15 ft)	90	= Total C	Cover		or FAC: <u>12.5</u> (A/B)		
1. Rubus laciniatus	5	Yes	FACII	Prevalence Index work	sheet:		
Corylus cornuta				Total % Cover of:	Multiply by:		
3.					x 1 =		
4				FACW species	x 2 =		
5				FAC species	x 3 =		
Horb Stratum (Diot size: 5 ft)	7	= Total C	Cover		x 4 =		
Herb Stratum (Plot size: <u>5 ft</u>) 1. Carex leptopoda	15	Ves	EΔC		x 5 =		
Carex leptopoda Rubus ursinus	_		FACU	Column Totals:	(A) (B)		
Geranium robertianum	-		FACU	Prevalence Index	= B/A =		
4. Polystichum munitum			FACU	Hydrophytic Vegetatio	n Indicators:		
5				☐ Rapid Test for Hydro			
6				☐ Dominance Test is >			
7				☐ Prevalence Index is			
8					tations¹ (Provide supporting or on a separate sheet)		
9				☐ Wetland Non-Vascu	· · · · · · · · · · · · · · · · · · ·		
10				☐ Problematic Hydropl	hytic Vegetation¹ (Explain)		
11		= Total C			and wetland hydrology must		
Woody Vine Stratum (Plot size: 30 ft)	<u>00</u>	Total	70 (0)	be present, unless distu	rbed or problematic.		
1				Hydrophytic			
2				Vegetation			
% Bare Ground in Herb Stratum 70	0	= Total C	Cover	Present? Yes	s □ No ⊠		
Remarks: Hydrophytic vegetation criteria not observed.							

Profile Desc	ription: (Describ	e to the c	lepth ne	eded to docu	ment the	indicator	or confirm	n the abs	sence	of indicators.)
Depth	Matrix	0/			x Feature		. 2	.		B
(inches)	Color (moist)	%	Cold	or (moist)	%	Type ¹	Loc ²	<u>Texture</u>		<u>Remarks</u>
0-3	10YR 3/2	100				-=	-	<u>GrSaLc</u>	<u> </u>	Gravelly Sandy loam
<u>3-12</u>	10YR 4/4	98			_=	-=		GrSaLc)	Gravelly Sandy Loam, with coal mix
	<u>-</u>		10YI	R 2/1	2	other	MM	COAL		Coal deposits present-mixed in matrix
		_								
					-			-		
								-		
	-	_			_					
	oncentration, D=De						ed Sand G			cation: PL=Pore Lining, M=Matrix.
_	Indicators: (Appli	icable to				ted.)		In	dicato	ors for Problematic Hydric Soils ³ :
Histosol	• •			Sandy Redox (S				_		Muck (A10)
-	ipedon (A2)			Stripped Matrix	` '	1) (4 MI DA 4)			Parent Material (TF2)
☐ Black His	n Sulfide (A4)			₋oamy Mucky N ₋oamy Gleyed I			(WLKA 1)		-	r Shallow Dark Surface (TF12) er (Explain in Remarks)
	l Below Dark Surfa	ca (A11)		Depleted Matrix		.)			Othe	er (Explain in Remarks)
	rk Surface (A12)	ce (ATT)		Redox Dark Su				³ In	ndicato	ors of hydrophytic vegetation and
	lucky Mineral (S1)			Depleted Dark S	, ,					and hydrology must be present,
	leyed Matrix (S4)			Redox Depress	•	,				ss disturbed or problematic.
Restrictive I	Layer (if present):									
Type:				-						
Depth (in	ches):							Hydri	c Soil	Present? Yes ☐ No ⊠
Remarks: No	hydric soil criteria	observed	d. Coal c	leposits mixed i	into matrix	from 3 -	12 inches.	I.		
	OV									
HYDROLO										
_	drology Indicators		عام بامسان		h .)				C	adam da dia atawa (2 an mana na maina d)
	cators (minimum of	one requ	irea; cn			(DO) (-				ndary Indicators (2 or more required)
	Water (A1)			☐ Water-Stai			xcept will	KA	∐ vv	/ater-Stained Leaves (B9) (MLRA 1, 2,
	ter Table (A2)				A, and 4B)				4A, and 4B)
☐ Saturation	` '			☐ Salt Crust	, ,	- (D40)				rainage Patterns (B10)
☐ Water Ma	` '			☐ Aquatic Inv		` '				ry-Season Water Table (C2)
	t Deposits (B2)			☐ Hydrogen ☐ Oxidized F			Living Doo	to (C2)		aturation Visible on Aerial Imagery (C9) eomorphic Position (D2)
	osits (B3)			☐ Oxidized F		_	_	is (C3)		hallow Aquitard (D3)
_	t or Crust (B4) osits (B5)			☐ Recent Iro		•	•	:)		AC-Neutral Test (D5)
-	Soil Cracks (B6)			☐ Stunted or			•	•		aised Ant Mounds (D6) (LRR A)
	on Visible on Aerial	Imagery	(B7)	Other (Exp			· · / (LIXIX A)	,		rost-Heave Hummocks (D7)
	Vegetated Conca		, ,	_ other (Exp	nam m rec	mantoj			ш	ost ricave riammoons (B1)
Field Obser			(20)							
Surface Wat		Yes 🗌	No 🗵	Depth (inches	3).					
Water Table		Yes 🗌	No ⊠	Depth (inches						
Saturation P		Yes 🗌	No ⊠	Depth (inches	•		Wetl	and Hvd	rolog	y Present? Yes □ No ⊠
(includes car	oillary fringe)				•			_		yrresent. res 🗀 ne 🖂
Describe Re	corded Data (strea	m gauge,	monitor	ing well, aerial	photos, p	revious in	spections),	if availab	ole:	
Remarks: No	primary nor secor	ndary hyd	rologic c	criteria observe	d.					

Project/Site: 1042.0005 Ravensdale	(City/County	/: <u>Ravensda</u>	ale/King	Sampling Date: 10-13-2017
Applicant/Owner: Ravensdale LLC	State: WA Sampling Point: DP-7				
Investigator(s): Richard Peel, Emily Swaim					
Landform (hillslope, terrace, etc.): Terrace		Local relie	ef (concave,	, convex, none): Concave	Slope (%): <u>0</u>
Subregion (LRR): A2			•	•	
Soil Map Unit Name: Beausite gravelly sandy loam					
Are climatic / hydrologic conditions on the site typical for this					
Are Vegetation, Soil, or Hydrology sign	-		•		ent? Yes⊠ No□
Are Vegetation, Soil, or Hydrology natu				ed, explain any answers in	
			•		•
SUMMARY OF FINDINGS – Attach site map	snowing	Sampiin	g point i	ocations, transects,	important leatures, etc.
Hydrophytic Vegetation Present? Yes ⊠ No □		Is th	e Sampled	l Area	
Hydric Soil Present? Yes ☐ No ☒			in a Wetlar		o 🛛
Wetland Hydrology Present? Yes ☐ No ☒		. 4 - 41		- 1 D-1	-t -f Town -b -F
Remarks: Not all three wetland criteria observed; only hydronic land c	opnytic veg	etation crite	eria observe	ed. Data plot taken soutwe	Stot Irench F.
VEGETATION – Use scientific names of plant	ts.				
	Absolute	Dominant	Indicator	Dominance Test works	heet:
Tree Stratum (Plot size: 30 ft)	% Cover		· ·	Number of Dominant Sp	
1. Populus balsamifera				That Are OBL, FACW, o	r FAC: <u>2</u> (A)
2				Total Number of Domina	
3				Species Across All Strate	a: <u>2</u> (B)
4		= Total C		Percent of Dominant Spe	
Sapling/Shrub Stratum (Plot size: 15 ft)	10	- Total C	ovei	That Are OBL, FACW, o	r FAC: <u>100</u> (A/B)
1				Prevalence Index work	sheet:
2				Total % Cover of:	Multiply by:
3					x 1 =
4					x 2 =
5					x 3 =
Herb Stratum (Plot size: 5 ft)	0	= Total C	over		x 4 =
1. Juncus effusus	60	Yes	FACW		x 5 = (A) (B)
2. Agrostis capillaris	10		FAC	Column Totals.	(A) (B)
3. Holcus lanatus	10	No	FAC	Prevalence Index	= B/A =
4. Rumex crispus	10	No	FAC	Hydrophytic Vegetation	n Indicators:
5				☐ Rapid Test for Hydro	· ·
6					
7				Prevalence Index is	
8					tations¹ (Provide supporting or on a separate sheet)
9				☐ Wetland Non-Vascul	, ,
10				☐ Problematic Hydroph	nytic Vegetation¹ (Explain)
11				¹ Indicators of hydric soil	and wetland hydrology must
Woody Vine Stratum (Plot size: 30 ft)	90	= Total C	over	be present, unless distur	bed or problematic.
1				Hydrophytic	
2				Vegetation	
0/ Para Cround in Harb Stratium 40	0	= Total C	over		S ⊠ No □
% Bare Ground in Herb Stratum 10 Remarks: Hydrophytic vegetation criteria met through dom	inance test				
Nemarks. Hydrophytic vegetation chiena met through dom	mance test.				

	cription: (Descri		•		dox Feature				
Depth (inches)	Matrix Color (moist)	<u>x</u> %	Colo	or (moist)	%	Type¹	Loc ²	Texture	Remarks
0-8	10YR 2/2	100			_	-	_	GrSiLo	Gravelly Silty loam
8-10	10YR 3/6	55			_	_	_	GrSaLo	
8-10	10YR 3/4	<u> </u>			_			GrSaLo	
0-10	10110 3/4	43				-=		GISALU	Gravelly Sandy Loam, mixed matrix
								-	
¹Type: C=C	concentration, D=E	Depletion, F	RM=Red	luced Matrix,	CS=Covere	d or Coate	ed Sand G	rains.	² Location: PL=Pore Lining, M=Matrix.
Hydric Soil	Indicators: (App	licable to	all LRR	s, unless otl	herwise not	ted.)		Inc	licators for Problematic Hydric Soils ³ :
☐ Histosol	, ,			Sandy Redox					2 cm Muck (A10)
-	oipedon (A2)			Stripped Matr	, ,				Red Parent Material (TF2)
☐ Black Hi	, ,			Loamy Mucky			MLRA 1)		, ,
_ , ,	en Sulfide (A4) d Below Dark Surf	(A11)		Loamy Gleye		!)		Ш	Other (Explain in Remarks)
	ark Surface (A12)	ace (ATT)		Depleted Mat Redox Dark S	. ,			3In	dicators of hydrophytic vegetation and
	/lucky Mineral (S1)		Depleted Dar	` ,				wetland hydrology must be present,
	Gleyed Matrix (S4)			Redox Depre		,			unless disturbed or problematic.
Restrictive	Layer (if present):		· · ·					·
Type:				_					
Depth (in	nches):			=				Hydrid	: Soil Present? Yes ☐ No ⊠
Remarks: N	o hydric soil criteri	a observed	d.						
HYDROLO									
•	drology Indicato		irod: ob	ook all that a	anlu)				Secondary Indicators (2 or more required)
	cators (minimum o	one requ	iirea, cri			(DO) (-			Secondary Indicators (2 or more required)
	Water (A1)			☐ Water-S		, , ,	xcept MLF	KA	Water-Stained Leaves (B9) (MLRA 1, 2,
_	ater Table (A2)				4A, and 4B	9)		1	4A, and 4B) Drainage Patterns (B10)
☐ Saturation	larks (B1)			☐ Salt Cru	รเ (ธาา) Invertebrate	o (D12)			☐ Dry-Season Water Table (C2)
	nt Deposits (B2)				n Sulfide O				☐ Saturation Visible on Aerial Imagery (C9)
	posits (B3)				l Rhizosphe		Living Roo		Geomorphic Position (D2)
· ·	at or Crust (B4)				e of Reduce	_	_		☐ Shallow Aquitard (D3)
_	posits (B5)				ron Reducti	-	-		FAC-Neutral Test (D5)
	Soil Cracks (B6)				or Stressed		-	•	☐ Raised Ant Mounds (D6) (LRR A)
	on Visible on Aeria	al Imagany	(B7)		xplain in Re	•	., (=,	, !	☐ Frost-Heave Hummocks (D7)
		ai iiiiauciv		(-		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			_ ······ (-·)
☐ Sparsely									
Sparsely	y Vegetated Conc								
Field Obser	y Vegetated Conc	ave Surface	e (B8)	Depth (inch	nes):				
Field Obser Surface Wat	y Vegetated Concervations: ter Present?	ave Surface	e (B8)		nes):				
Field Obser Surface Wat Water Table	y Vegetated Conc rvations: ter Present? Present?	Yes Yes	e (B8) No ⊠ No ⊠	Depth (inch	nes):		Wetl	and Hvdı	rology Present? Yes □ No ⊠
Field Obser Surface Wat Water Table Saturation P (includes ca	y Vegetated Concervations: ter Present? Present? Present? pillary fringe)	Yes Yes Yes Yes	No 🖂 No 🖂	Depth (inch Depth (inch	nes): nes):			-	rology Present? Yes □ No ⊠
Field Obser Surface Wat Water Table Saturation P (includes ca	y Vegetated Concervations: ter Present? Present?	Yes Yes Yes Yes	No 🖂 No 🖂	Depth (inch Depth (inch	nes): nes):			-	
Field Obser Surface Wat Water Table Saturation P (includes ca Describe Re	y Vegetated Concervations: ter Present? Present? pillary fringe) ecorded Data (stre	Yes Yes Yes Area Yes Yes Yes Yes Yes Yes Yes Ye	No 🖂 No 🖂 No 🖂 monitor	Depth (inch Depth (inch	nes): nes):			-	
Field Obser Surface Wat Water Table Saturation P (includes ca Describe Re	y Vegetated Concervations: ter Present? Present? Present? pillary fringe)	Yes Yes Yes Area Yes Yes Yes Yes Yes Yes Yes Ye	No 🖂 No 🖂 No 🖂 monitor	Depth (inch Depth (inch	nes): nes):			-	
Field Obser Surface Wat Water Table Saturation P (includes ca Describe Re	y Vegetated Concervations: ter Present? Present? pillary fringe) ecorded Data (stre	Yes Yes Yes Area Yes Yes Yes Yes Yes Yes Yes Ye	No 🖂 No 🖂 No 🖂 monitor	Depth (inch Depth (inch	nes): nes):			-	
Field Obser Surface Wat Water Table Saturation P (includes ca Describe Re	y Vegetated Concervations: ter Present? Present? pillary fringe) ecorded Data (stre	Yes Yes Yes Area Yes Yes Yes Yes Yes Yes Yes Ye	No 🖂 No 🖂 No 🖂 monitor	Depth (inch Depth (inch	nes): nes):			-	

Project/Site: 1042.0005 Ravensdale		City/County	/: <u>Ravensda</u>	ale/King	Sampling Date: <u>10-13-2017</u>		
Applicant/Owner: Ravensdale LLC				State: WA	Sampling Point: DP-8		
Investigator(s): Richard Peel, Emily Swaim							
Landform (hillslope, terrace, etc.): Valley Floor		Local relie	ef (concave,	convex, none): Concave	Slope (%): 1		
Subregion (LRR): A2			•	·			
Soil Map Unit Name: Beausite gravelly sandy loam				_			
Are climatic / hydrologic conditions on the site typical for this							
Are Vegetation, Soil, or Hydrology sign	-		•		ent? Yes⊠ No□		
Are Vegetation, Soil, or Hydrology natu				ed, explain any answers in			
			•		•		
SUMMARY OF FINDINGS – Attach site map	snowing	sampling	g point i	ocations, transects,	important features, etc.		
Hydrophytic Vegetation Present? Yes ⊠ No □		Is th	e Sampled	Area			
Hydric Soil Present? Yes ☐ No ☒			in a Wetlar		o 🛛		
Wetland Hydrology Present? Yes ☐ No ☒							
Remarks: Not all three wetland criteria observed							
VEGETATION – Use scientific names of plant	s.						
	Absolute	Dominant	Indicator	Dominance Test works	sheet:		
Tree Stratum (Plot size: 30 ft)	% Cover			Number of Dominant Sp			
Pseudotsuga menziesii				That Are OBL, FACW, o	r FAC: <u>2</u> (A)		
2				Total Number of Domina			
3				Species Across All Strate	a: <u>3</u> (B)		
4				Percent of Dominant Spe			
Sapling/Shrub Stratum (Plot size: 15 ft)	10	= Total C	over	That Are OBL, FACW, o	r FAC: <u>66.6</u> (A/B)		
1. Spiraea douglasii	90	Yes	FACW	Prevalence Index work	sheet:		
Vaccinium parvifolium	5	No	FACU	Total % Cover of:	Multiply by:		
3. Rubus armeniacus	3	No	FAC	OBL species	x 1 =		
4. Rubus laciniatus	2	No	FACU	FACW species	x 2 =		
5					x 3 =		
Harb Christian (Distains 54)	100	= Total C	over		x 4 =		
Herb Stratum (Plot size: 5 ft)	60	Vaa	OBL		x 5 =		
1. Carex obnupta	60			Column Totals:	(A) (B)		
2				Prevalence Index	= B/A =		
4				Hydrophytic Vegetation			
5				☐ Rapid Test for Hydro			
6.					·50%		
7				☐ Prevalence Index is	≤3.0 ¹		
8					tations ¹ (Provide supporting or on a separate sheet)		
9				□ Wetland Non-Vascul	. ,		
10				—	nytic Vegetation¹ (Explain)		
11	-			1 –	and wetland hydrology must		
Woody Vine Stratum (Plot size: 30 ft)	60	= Total C	over	be present, unless distur			
1							
2				Hydrophytic Vegetation			
		= Total C	over		S ⊠ No □		
% Bare Ground in Herb Stratum	dorelle	. taat					
Remarks: Hydrophytic vegetation criteria observed through	i dominance	e iest.					

	cription: (Describ	e to the de	pth needed to			or or confir	m the absence	e of indicators.)
Depth (inches)	Matrix Color (moist)	%	Color (moist	Redox Feat		_Loc²	Texture	Remarks
0-5	7.5YR 2.5/2	100					VfSaLo	Very Fine Sandy Loam w/ organics
5-11	7.5YR 3/1	100	_				VfSaLo	Very Fine Sandy Loam w/ organics
			- 7/5//D 4/0		-			-
11-18	7.5YR 4/2	99	7/5YR 4/6	1	<u>C</u>	<u>M</u>	Silt Loam	Silt Loam With organics
						_		
			•					
			-					
	oncentration, D=D					ated Sand G		ocation: PL=Pore Lining, M=Matrix.
_	Indicators: (App	licable to a			noted.)			tors for Problematic Hydric Soils ³ :
Histosol	• •		☐ Sandy R					m Muck (A10)
☐ HISUC E	oipedon (A2)			Matrix (S6) /lucky Mineral	(F1) (exce	nt MIRA 1)		d Parent Material (TF2) ry Shallow Dark Surface (TF12)
	n Sulfide (A4)		-	Gleyed Matrix		pt MEIXA 1)		her (Explain in Remarks)
	d Below Dark Surfa	ace (A11)	-	d Matrix (F3)	()			,
	ark Surface (A12)			ark Surface (•			tors of hydrophytic vegetation and
-	lucky Mineral (S1)			d Dark Surface	` '			land hydrology must be present,
	Sleyed Matrix (S4) Layer (if present)	_	☐ Redox D	epressions (F	-8)		unle	ess disturbed or problematic.
Type:	Layer (ir present)							
Depth (in							Hydric Sc	oil Present? Yes □ No ⊠
Remarks: 11	I-18 inches Dark c	nal dennsits	intermixed N	o hydric soils	observed a	s the hotton	•	pes not have 2 percent more of
	ic features. Does			o nyuno cono	0000. VOG G	o tino botton	iiiioot layor at	os not have 2 persont more cr
HYDROLO	GY							
Wetland Hy	drology Indicator	s:						
Primary Indi	cators (minimum o	f one require	ed; check all th	nat apply)			Sec	ondary Indicators (2 or more required)
☐ Surface	Water (A1)		☐ Wa	ter-Stained Le	eaves (B9)	(except ML	RA 🗆	Water-Stained Leaves (B9) (MLRA 1, 2,
_	iter Table (A2)			1, 2, 4A, and	4B)			4A, and 4B)
☐ Saturation				t Crust (B11)				Drainage Patterns (B10)
☐ Water M	` '			uatic Invertebr	, ,		_	Dry-Season Water Table (C2)
	nt Deposits (B2)		-	drogen Sulfide	. ,			Saturation Visible on Aerial Imagery (C9)
	posits (B3)			dized Rhizos		-		Geomorphic Position (D2)
☐ Iron Dep	at or Crust (B4)			sence of Red	•	•		Shallow Aquitard (D3)
	Soil Cracks (B6)			cent Iron Redunted or Stress		•	,	FAC-Neutral Test (D5) Raised Ant Mounds (D6) (LRR A)
	on Visible on Aeria	l Imagery (F		ner (Explain in		DI) (LIKIK A	-	Frost-Heave Hummocks (D7)
	Vegetated Conca	0 , (•	ioi (Explaiii iii	rtemantoj			ricat floave flammooks (27)
Field Obser			()					
Surface Wat	er Present?	Yes 🔲 N	lo 🛛 Depth	(inches):				
Water Table				(inches):				
Saturation P	resent?			(inches):			land Hydrolo	gy Present? Yes □ No ⊠
	pillary fringe)						7 7 11	<u>. </u>
Describe Re	corded Data (strea	am gauge, n	nonitoring well	, aerial photos	s, previous i	nspections)	, it available:	
Remarks: No	o primary hydrolog	ic indicators	observed					
Acmains. IV	o primary frydrolog	io iridicators	opaciveu.					

Project/Site: 1042.0005 Ravensdale	City/County: Ravensdale/King Sampling Date:10-13-						
Applicant/Owner: Ravensdale LLC				State: WA	Sampling Point: <u>DP-9</u>		
Investigator(s): Richard Peel, Emily Swaim			Section, To	ownship, Range: <u>01, 22N, 0</u>	06E & 07E		
Landform (hillslope, terrace, etc.): Valley Floor		Local rel	ief (concave,	, convex, none): Concave	Slope (%): 2		
Subregion (LRR): A2	Lat: <u>47.33</u>	3701338		Long: <u>-121.97606579</u>	Datum: WGS 84		
Soil Map Unit Name: Beausite gravelly sandy loam				NWI classificat	ion: N/A		
Are climatic / hydrologic conditions on the site typical for this							
Are Vegetation, Soil, or Hydrology sign	nificantly dist	turbed?	Are "No	ormal Circumstances" pres	ent? Yes ⊠ No □		
Are Vegetation, Soil, or Hydrology natu			(If need	ed, explain any answers in	Remarks.)		
SUMMARY OF FINDINGS – Attach site map			ng point l	ocations, transects,	important features, etc.		
Hydrophytic Vegetation Present? Yes ⊠ No □		_					
Hydric Soil Present? Yes ⊠ No □			he Sampled				
Wetland Hydrology Present? Yes ⊠ No □		Wit	hin a Wetlar	nd? Yes ⊠ No	, □		
Remarks: All three wetland criteria observed. Located in V	Vetland C.						
VEGETATION – Use scientific names of plan	ts.						
Tree Stratum (Plot size: 30 ft)	Absolute % Cover		t Indicator	Dominance Test works			
1				Number of Dominant Spe That Are OBL, FACW, or			
2.							
3				Total Number of Domina Species Across All Strata			
4					. ,		
Sapling/Shrub Stratum (Plot size: 15 ft)	0			Percent of Dominant Spe That Are OBL, FACW, or	r FAC: <u>83</u> (A/B)		
1. Salix scouleriana	<u>15</u>	Yes	FAC	Prevalence Index works			
2. Rubus armeniacus					Multiply by:		
3. Salix lucida spp. lasiandra					x 1 =		
4. Rubus spectabilis	5	Yes	FAC	FACW species			
5. Rubus laciniatus	5				x 3 =		
Herb Stratum (Plot size: 5 ft)	35	= Total (Cover		x 4 =		
1. Scirpus cyperinus	93	Yes	OBL	Column Totals:	x 5 =		
2. Rubus ursinus				Column rotals.	(A) (B)		
3.				Prevalence Index	= B/A =		
4				Hydrophytic Vegetation	ı Indicators:		
5				☐ Rapid Test for Hydro	phytic Vegetation		
6				□ Dominance Test is >	50%		
7				☐ Prevalence Index is :			
8 9				data in Remarks	ations ¹ (Provide supporting or on a separate sheet)		
10.				☐ Wetland Non-Vascul			
11.				•	nytic Vegetation ¹ (Explain)		
Woody Vine Stratum (Plot size: <u>30 ft</u>)	95	= Total (Cover	¹ Indicators of hydric soil abe present, unless distur	and wetland hydrology must bed or problematic.		
1				Hydrophytic			
2				Vegetation			
% Bare Ground in Herb Stratum 5	0	= Total (Cover	Present? Yes	⊠ No □		
Remarks: Betula papyrifera and Pseudotsuga menziesii o	utside of plot	. Hydroph	nytic vegetati	on criteria observed through	h dominance test.		

Profile Desc	cription: (Describe	e to the c	lepth ne	eded to docu	ment the	e indicator	or confirm	n the ab	sence o	of indicators.)			
Depth	Matrix	0/			ox Featu		. 2	.					
(inches)	Color (moist)	<u>%</u>	Colo	r (moist)	%	Type ¹	Loc ²	<u>Textur</u>		Remarks			
0-5	10YR 2/2	100	- =			_=	-	SiLo		Very Fine Silty Loam			
<u>5-9</u>	7.5YR 4/1	98	7.5Y	R 4/6	2	<u>C</u>	<u>M</u>	CI		Clay			
9-12	10YR 3/1	95	5YR	3/4	5	<u>C</u>	PI	Cl		Clay			
12-20	10YR 5/1	98	10Y	R 3/6	2	<u>C</u>	M/PI	CI		Clay			
	-	_			_								
	oncentration, D=De						ed Sand G			ation: PL=Pore Lining, M=Matrix.			
_	Indicators: (Appli	cable to				oted.)				s for Problematic Hydric Soils ³ :			
☐ Histosol	(A1) pipedon (A2)			Sandy Redox (S Stripped Matrix				_		Muck (A10) Parent Material (TF2)			
Black His				-oamy Mucky N	` '	F1) (excen	· MI RA 1)	L		Shallow Dark Surface (TF12)			
	n Sulfide (A4)			_oamy Gleyed			· WEIXA I)		-	(Explain in Remarks)			
	l Below Dark Surfa	ce (A11)		Depleted Matrix		-/		_	_	(27prain in remaine)			
	rk Surface (A12)	, ,		Redox Dark Su		3)		3	ndicator	s of hydrophytic vegetation and			
☐ Sandy M	lucky Mineral (S1)			Depleted Dark	Surface	(F7)			wetlan	nd hydrology must be present,			
-	leyed Matrix (S4)			Redox Depress	ions (F8)			unless	disturbed or problematic.			
	Layer (if present):												
Type: Depth (in	ahaa):			-									
. ,	,							Hydr	ic Soil F	Present? Yes ⊠ No □			
Remarks: Hy	dric soils criteria o	bserved t	hrough i	ndicator A12.									
HYDROLO	GY												
Wetland Hy	drology Indicators	s:											
Primary India	cators (minimum of	one requ	ired; che	eck all that app	ly)				Second	dary Indicators (2 or more required)			
☐ Surface	Water (A1)			☐ Water-Sta	ined Lea	ves (B9) (e	xcept MLF	RA	⊠ Wa	ater-Stained Leaves (B9) (MLRA 1, 2,			
☐ High Wa	ter Table (A2)			1, 2, 4	A, and 4	В)				4A, and 4B)			
☐ Saturation	on (A3)			☐ Salt Crust	(B11)					ainage Patterns (B10)			
	arks (B1)			Aquatic In		` '			-	y-Season Water Table (C2)			
	t Deposits (B2)			Hydrogen						turation Visible on Aerial Imagery (C9)			
	osits (B3)					eres along	_	ots (C3)		omorphic Position (D2)			
_	t or Crust (B4)					ced Iron (C	•			allow Aquitard (D3)			
-	osits (B5)					tion in Tille	•	•		C-Neutral Test (D5)			
	Soil Cracks (B6)		(DZ)			d Plants (D	1) (LRR A)		ised Ant Mounds (D6) (LRR A)			
	on Visible on Aerial		, ,	☐ Other (Exp	Diain in R	(emarks)			☐ Fro	ost-Heave Hummocks (D7)			
	Vegetated Concav	e Suriace	e (B8)				<u> </u>						
Field Obser		Vac 🗆	No 🎞	Donth /inches	٥).								
Surface Wat		_	No ⊠	Depth (inches									
Water Table		Yes 🗌	No ⊠	Depth (inches	•		\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\			Processia Ver M. Ne D.			
Saturation P (includes cap		Yes 🗌	No 🛚	Depth (inche	s):		weti	iand Hyd	arology	Present? Yes 🛛 No 🗌			
Describe Re	corded Data (stream	m gauge,	monitor	ing well, aerial	photos,	previous in	spections),	if availa	ıble:				
Remarks: Hy	/drologic criteria ob	served th	rough s	econdary indica	ators B9,	D2, and D	5.						

Project/Site: 1042.0005 Ravensdale	(City/Count	y: <u>Ravensda</u>	Sampling Date: 10-13-2017			
Applicant/Owner: Ravensdale LLC				State: WA	Sampling Point: <u>DP-10</u>		
Investigator(s): Richard Peel, Emily Swaim			Section, To	ownship, Range: <u>01, 22N, 0</u>)6E & 07E		
Landform (hillslope, terrace, etc.): Hillslope		Local reli	ef (concave,	, convex, none): Concave	Slope (%): <u>5</u>		
Subregion (LRR): A2	_ Lat: <u>47.33</u>	3705795		Long: <u>-121.97609175</u>	Datum: WGS 84		
Soil Map Unit Name: Beausite gravelly sandy loam	NWI classification: N/A						
Are climatic / hydrologic conditions on the site typical for this							
Are Vegetation, Soil, or Hydrology sign							
Are Vegetation, Soil, or Hydrology natu			(If need	ed, explain any answers in	Remarks.)		
SUMMARY OF FINDINGS – Attach site map				-	•		
Hydrophytic Vegetation Present? Yes ⊠ No □		1- 41					
Hydric Soil Present? Yes ☐ No ☒			ne Sampled nin a Wetlar		. M		
Wetland Hydrology Present? Yes ☐ No ☒				_			
Remarks: Not all three wetland criteria observed; only hyd	rophytic veg	etation crit	teria observe	ed. Located in upalnd area	adjacent to Wetland C.		
VEGETATION – Use scientific names of plan	ts.						
	Absolute			Dominance Test works	heet:		
Tree Stratum (Plot size: 30 ft) 1	% Cover			Number of Dominant Spe That Are OBL, FACW, or			
2				Total Number of Domina	ınt		
3				Species Across All Strata	a: <u>4</u> (B)		
4				Percent of Dominant Spe			
Sapling/Shrub Stratum (Plot size: 15 ft)	0	= Total C	cover	That Are OBL, FACW, or	r FAC: <u>75</u> (A/B)		
1. Rubus armeniacus	20	Yes	FAC	Prevalence Index works	sheet:		
2. Rubus laciniatus	10	Yes	<u>FACU</u>	Total % Cover of:	Multiply by:		
3					x 1 =		
4					x 2 =		
5					x 3 =		
Herb Stratum (Plot size: 5 ft)	30	= Total C	Cover		x 4 =		
1. Trifolium hybridum	30	Yes	FAC		x 5 = (A) (B)		
2. Agrostic capillaris		Yes	FAC	Column rotals.	(A) (D)		
3. Cirsium arvense		No	FACU		= B/A =		
4				Hydrophytic Vegetation			
5				Rapid Test for Hydro	· ·		
6				□ Dominance Test is > □ □ Dominance Test is > □ D			
7				Prevalence Index is:	≤3.0¹ ations¹ (Provide supporting		
8					or on a separate sheet)		
9				☐ Wetland Non-Vascul	ar Plants ¹		
10				☐ Problematic Hydroph	nytic Vegetation¹ (Explain)		
11		= Total C	Cover		and wetland hydrology must		
Woody Vine Stratum (Plot size: 30 ft)				be present, unless distur	bed of problematic.		
1				Hydrophytic			
2				Vegetation	M No 🗆		
% Bare Ground in Herb Stratum	0	= Total C	over	Present? Yes	⊠ No □		
Remarks: Hydrophytic vegetation technically observed due	e to a domin	ance of fac	culatative sp	pecies			

Profile Desc	ription: (Describ	e to the o	depth ne	eded to docu	ment the	indicator	or confirn	n the abs	sence of indicators.)
Depth	Matrix	0/			ox Feature		. 2	- .	Б
(inches)	Color (moist)	%	Colc	or (moist)	%	Type ¹	Loc ²	Texture	<u> </u>
0-5	10YR 2/1	100					-	SiLo	Fine Silt Loam
<u>5-19</u>	10YR 3/1	99	7.5Y	'R 2.5/3	_ 1	<u>C</u>	<u>PI </u>	Clay	Clay
<u>19-20</u>	10YR 4/4	100			_ =	_=		Clay	<u>Clay</u>
								-	
								-	
	-		_					-	
								-	
	oncentration, D=De						ed Sand G		² Location: PL=Pore Lining, M=Matrix.
_	Indicators: (Appl	icable to				tea.)			dicators for Problematic Hydric Soils ³ :
☐ Histosol	(A1) ipedon (A2)			Sandy Redox (Stripped Matrix				님	2 cm Muck (A10) Red Parent Material (TF2)
☐ Black His				Loamy Mucky N	` '	1) (evcen	+ MI RΔ 1)	_	Very Shallow Dark Surface (TF12)
	n Sulfide (A4)			Loamy Gleyed			t WILIXA I)		
	l Below Dark Surfa	ce (A11)		Depleted Matrix		-/			Other (Explain in Normano)
	rk Surface (A12)	00 (/ (/ / /		Redox Dark Su)		3In	dicators of hydrophytic vegetation and
	lucky Mineral (S1)			Depleted Dark					wetland hydrology must be present,
_	leyed Matrix (S4)			Redox Depress		,			unless disturbed or problematic.
Restrictive	Layer (if present):								
Type:				=					
Depth (in	ches):			-				Hydrid	Soil Present? Yes ☐ No ⊠
Remarks: Hy	dric soils indicator	s not obs	erved.						
HYDROLO	GY								
_	drology Indicators								
Primary India	cators (minimum of	one requ	ired; ch						Secondary Indicators (2 or more required)
☐ Surface	Water (A1)			☐ Water-Sta	ined Leav	es (B9) (e	except MLF	RA	☐ Water-Stained Leaves (B9) (MLRA 1, 2,
☐ High Wa	ter Table (A2)				A, and 4E	3)			4A, and 4B)
☐ Saturation	` '			☐ Salt Crust	(B11)				☐ Drainage Patterns (B10)
☐ Water M	arks (B1)			☐ Aquatic In	vertebrate	es (B13)			☐ Dry-Season Water Table (C2)
☐ Sedimen	t Deposits (B2)			☐ Hydrogen	Sulfide O	dor (C1)			☐ Saturation Visible on Aerial Imagery (C9)
☐ Drift Dep	osits (B3)			☐ Oxidized F	Rhizosphe	res along	Living Roo	ots (C3)	Geomorphic Position (D2)
☐ Algal Ma	t or Crust (B4)			☐ Presence	of Reduce	ed Iron (C	4)		☐ Shallow Aquitard (D3)
☐ Iron Dep	osits (B5)			☐ Recent Iro	n Reduct	ion in Tille	d Soils (C6	6)	☐ FAC-Neutral Test (D5)
☐ Surface	Soil Cracks (B6)			☐ Stunted or	Stressed	l Plants (D	01) (LRR A))	Raised Ant Mounds (D6) (LRR A)
☐ Inundation	on Visible on Aerial	Imagery	(B7)	☐ Other (Exp	olain in Re	emarks)			☐ Frost-Heave Hummocks (D7)
☐ Sparsely	Vegetated Concav	e Surfac	e (B8)						
Field Obser	vations:								
Surface Wat	er Present?	Yes 🗌	No 🛛	Depth (inche	s):				
Water Table	Present?	Yes 🗌	No 🛛	Depth (inche	s):				
Saturation P		Yes 🗌	No 🛛	Depth (inche	s):		Wetl	and Hydi	rology Present? Yes 🗌 No 🛚
(includes cap	oillary fringe) corded Data (strea	m dallao	monitor	ing well periol	nhotos n	rovious in	enactions)	if availab	lo:
Describe Re	corded Data (Sifea	ııı yauye,	HIOHIO	ing well, aellal	ρποιοδ, β	revious III	apeciions),	ıı avallab	iic.
Domarka: N	primary or second	lant had	ologie in	dicatora chas=	rod				
Nemarks. No	primary or second	aary riyuro	nogic in	uicaiois observ	eu.				

Project/Site: 1042.0005 Ravensdale	ty: <u>Ravensda</u>	ale/King	Sampling Date: <u>10-13-2017</u>			
Applicant/Owner: Ravensdale LLC				State: WA	Sampling Point: DP-11	
Investigator(s): Richard Peel, Emily Swaim			Section, To	ownship, Range: <u>01, 22N, (</u>	06E & 07E	
Landform (hillslope, terrace, etc.): Hillslope		Local reli	ef (concave,	, convex, none): Slope	Slope (%): <u>10</u>	
Subregion (LRR): A2	_ Lat: <u>47.33</u>	3842549		Long: <u>-121.97650561</u>	Datum: WGS 84	
Soil Map Unit Name: Beausite gravelly sandy loam				_		
Are climatic / hydrologic conditions on the site typical for this						
Are Vegetation, Soil, or Hydrology sign	-		•			
Are Vegetation, Soil, or Hydrology natu				ed, explain any answers in		
SUMMARY OF FINDINGS – Attach site map					•	c.
Hydrophytic Vegetation Present? Yes ☐ No ☒						_
Hydric Soil Present? Yes ☐ No ☒			he Sampled		- 17	
Wetland Hydrology Present? Yes ☐ No ☒		Witi	hin a Wetlar	nd? Yes □ No	p 🕅	
Remarks: No wetland criteria observed. Located near Tren	ich E.					
VECTATION . Her rejentific names of plant						
VEGETATION – Use scientific names of plant		Dominan	t Indicator	Dominance Test works	choot:	
Tree Stratum (Plot size: 30 ft)	% Cover			Number of Dominant Sp		
Tsuga heterophylla	60	Yes	FACU	That Are OBL, FACW, o		
2. Alnus rubra	30	Yes	FAC	Total Number of Domina	ant	
3. Acer macrophyllum				Species Across All Strat	a: <u>5</u> (B)	
4				Percent of Dominant Sp	ecies	
Sapling/Shrub Stratum (Plot size: 15 ft)	<u>100</u>	= Total (Cover	That Are OBL, FACW, o	or FAC: 40 (A/B)	
1. Acer circinatum	20	Yes	FAC	Prevalence Index work	sheet:	
2				Total % Cover of:	Multiply by:	
3			. <u></u>	OBL species	x 1 =	
4				•	x 2 =	
5					x 3 =	
Herb Stratum (Plot size: 5 ft)	<u>20</u>	= Total (Cover		x 4 =	
1. Rubus ursinus	50	Yes	FACU		x 5 = (A) (B)	
2. Polystitchum munitum				Goldmin Totals.	(A) (B)	
3					= B/A =	
4				Hydrophytic Vegetation		
5				Rapid Test for Hydro		
6				☐ Dominance Test is > ☐ Prevalence Index is		
7				_	≤3.0 tations¹ (Provide supporting	
8					or on a separate sheet)	
9 10				☐ Wetland Non-Vascul	lar Plants¹	
11.				☐ Problematic Hydroph	hytic Vegetation¹ (Explain)	
	75			¹ Indicators of hydric soil be present, unless distu	and wetland hydrology must	
Woody Vine Stratum (Plot size: 30 ft)				be present, unless distal	bed of problematic.	
1				Hydrophytic		
2				Vegetation	s □ No ⊠	
% Bare Ground in Herb Stratum <u>25</u>	0	= Total C	Jover	Fresent: Tes	, LI NO 🖂	
Remarks: Hydrophytic vegetation criteria not observed.				1		_

Depth	cription: (Descrii Matrix		eptn needed to	Redox Feat		or or confirm	n the abso	ence of indicators.)
(inches)	Color (moist)	%	Color (moist) %	Type ¹	Loc ²	Texture	Remarks
0-6	2.5YR 2.5/3	100	_	<u>-</u>			SaLo	Sandy Loam in the Duff layer
6-10	7.5YR 5/3	93	7.5YR 5/6	4	С	М	SiLo	Silt Loam- Mixed Matrix
6-10	_		7.5YR 6/2	3	 D	M	SiLo	Silty Loam / Coal present not colored
0 10	-		7.0110/2				OILO	Only Eddin's Goal prodont not Golored
								
¹Type: C=C	oncentration, D=D	epletion, RI	M=Reduced Ma	atrix, CS=Cove	ered or Coa	ited Sand G	rains.	² Location: PL=Pore Lining, M=Matrix.
Hydric Soil	Indicators: (App	licable to a	II LRRs, unles	ss otherwise i	noted.)		Ind	icators for Problematic Hydric Soils ³ :
☐ Histosol	, ,		☐ Sandy F					2 cm Muck (A10)
	pipedon (A2)			Matrix (S6)				Red Parent Material (TF2)
☐ Black Hi	, ,		-	Mucky Mineral		ot MLRA 1)		Very Shallow Dark Surface (TF12)
_ , .	n Sulfide (A4) d Below Dark Surfa	200 (111)	-	Gleyed Matrix ((F2)		Ц	Other (Explain in Remarks)
	ark Surface (A12)	ace (ATT)		d Matrix (F3) Park Surface (F	- 6)		3Inc	licators of hydrophytic vegetation and
	lucky Mineral (S1)			d Dark Surface	•			wetland hydrology must be present,
-	Gleyed Matrix (S4)			epressions (F				unless disturbed or problematic.
	Layer (if present)):		<u> </u>				·
Type:								
Depth (in	ches):						Hydric	Soil Present? Yes ☐ No ⊠
Remarks: H	ydric soil indicators	s not observ	red.				<u> </u>	
L HYDROLO	·CV							
-	drology Indicator							
_	cators (minimum c		ed: check all th	nat annly)			ç	Secondary Indicators (2 or more required)
	Water (A1)	n one requi		ter-Stained Le	2005 (B0) (ovcont ML		☐ Water-Stained Leaves (B9) (MLRA 1, 2,
	iter Table (A2)		□ vva	1, 2, 4A, and		except witi	NA L	4A, and 4B)
☐ Saturation	` '		□ Sal	t Crust (B11)	40)		Г	☐ Drainage Patterns (B10)
	arks (B1)		_	uatic Invertebra	ates (B13)			☐ Dry-Season Water Table (C2)
	nt Deposits (B2)			drogen Sulfide				☐ Saturation Visible on Aerial Imagery (C9)
	posits (B3)		-	dized Rhizosp		a Livina Roc		Geomorphic Position (D2)
	at or Crust (B4)			sence of Redu			· · · · _	☐ Shallow Aquitard (D3)
_	osits (B5)			cent Iron Redu	-	-		☐ FAC-Neutral Test (D5)
-	Soil Cracks (B6)			nted or Stress			•	☐ Raised Ant Mounds (D6) (LRR A)
	on Visible on Aeria	al Imagery (I		er (Explain in	•	, ,	, [☐ Frost-Heave Hummocks (D7)
☐ Sparsely	Vegetated Conca	ave Surface	(B8)					
Field Obser	vations:							
Surface Wat	er Present?	Yes 🔲 1	No 🛛 Depth	(inches):				
Water Table	Present?	Yes 🔲 1	No 🛛 Depth	(inches):				
Saturation P	resent?	Yes 🔲 1	No 🛛 Depth	(inches):		Wet	land Hydr	ology Present? Yes ☐ No ⊠
(includes ca	pillary fringe)	am galler	nonitorine	oorial plants -	providents !	noncetic := :\	if ovell-I-I	0:
Describe Re	corded Data (stream	am gauge, r	nonitoring well	, aeriai pnotos	, previous ii	nspections),	, it availabi	e:
Domanica: N	o primont or access	don martie	d budsals =:: !	diantora che	wod			
rtemarks: No	o primary or secor	ıdary wetlar	iu riyurology in	uicators obser	veu.			

Project/Site: 1042.0005 Ravensdale		Sampling Date: 12-04-2017			
Applicant/Owner: Ravensdale LLC				State: WA	Sampling Point: <u>DP-12</u>
Investigator(s): Richard Peel, Emily Swaim			Section, To	ownship, Range: <u>01, 22N,</u>	06E & 07E
Landform (hillslope, terrace, etc.): Depression		_Local rel	ief (concave	, convex, none): Concave	Slope (%): <u>0</u>
Subregion (LRR): A2	Lat: 47.3	4063217	•	Long: -121.9829326	Datum: WGS 84
Soil Map Unit Name: Beausite gravelly sandy loam					
Are climatic / hydrologic conditions on the site typical for this					
Are Vegetation X, Soil X, or Hydrology significantly of	-		•		
Are Vegetation, Soil, or Hydrology natu				ed, explain any answers in	
SUMMARY OF FINDINGS – Attach site map					•
Hydrophytic Vegetation Present? Yes ⊠ No □					
Hydric Soil Present? Yes ☐ No ☒			he Sampled		
Wetland Hydrology Present? Yes ⊠ No □		Wit	hin a Wetlar	nd? Yes □ N	0 🛚
Remarks: Not all three wetland criteria observed; only hyd					lated precipitation 134% of
normal for the 2017/2018 water year (Sea-Tac Internations	al Airport). L	ocated al	ongside Trer	nch E.	
VEGETATION – Use scientific names of plan	ts.				
Tree Stratum (Plot size: 30 ft)	Absolute % Cover		nt Indicator	Dominance Test works	
Pseudotsuga menziesii				Number of Dominant Sp	ecies r FAC: <u>4</u> (A)
Alnus rubra					
3				Total Number of Domina Species Across All Strat	
4				,	、,
	10			Percent of Dominant Sp That Are OBL, FACW, o	ecies r FAC: <u>80</u> (A/B)
Sapling/Shrub Stratum (Plot size: 15 ft)					
1. Rubus spectabilis				Prevalence Index work	
2. Rubus armeniacus					Multiply by: x 1 =
3					x 2 =
5					x 3 =
	50				x 4 =
Herb Stratum (Plot size: 5 ft)				UPL species	x 5 =
1. Athryium cyclosorum	40			Column Totals:	(A) (B)
2. Polystichum munitum				Prevalence Index	= B/A =
3				Hydrophytic Vegetatio	
4. 5.				☐ Rapid Test for Hydro	
6.				☐ Dominance Test is >	· ·
7				☐ Prevalence Index is	≤3.0 ¹
8					tations ¹ (Provide supporting
9					or on a separate sheet)
10				☐ Wetland Non-Vascu	nytic Vegetation¹ (Explain)
11				-	and wetland hydrology must
Woody Vino Stratum (Plot cize: 30 ft)	45	= Total	Cover	be present, unless distu	
Woody Vine Stratum (Plot size: 30 ft) 1					
2			· ——	Hydrophytic	
	0		Cover	Vegetation Present? Yes	i ⊠ No □
% Bare Ground in Herb Stratum					
Remarks: Hydrophytic vegetation critera technically obser	ved due to d	Iominance	e of facultativ	e, non-diagnostic species.	

Depth	cription: (Describ Matrix	(Re	dox Featu	<u>ıres</u>					
(inches)	Color (moist)	%	Colo	r (moist)	%	Type ¹	Loc ²	Textur	<u>e</u>	Remarks	
0-6	10YR 3/2	100	_ =				. <u>-</u>	FILL		Gravelly Sandy Loam FI	LL- disturbed
<u>6-8</u>	<u>5Y 6/2</u>	90	<u>5Y 6</u>	5/3	5	<u>C</u>	<u>M</u>	GrSiLo		Gravelly Silty Loam- mix	ed matrix
	<u>-</u>		7.5Y	'R 5/8	5	<u>C</u>	M/PI	<u>GrSiLo</u>		Gravelly Silt Loam- mixe	d matrix
<u>8-16</u>	10YR 3/3	97	<u>2.5Y</u>	'R 3.6	3	<u>C</u>	<u>M</u>	<u>GrSaLo</u>	<u> </u>	Gravelly Sandy Loam	,
	Concentration, D=D						ted Sand G			ation: PL=Pore Lining, M	
-	Indicators: (App	licable to				oted.)				rs for Problematic Hydr	ic Soils³:
Histosol				Sandy Redox				_		Muck (A10)	
	pipedon (A2) istic (A3)			Stripped Mat	` '	(F1) (aveen	4 MI D A 4\			Parent Material (TF2)	E40)
_	en Sulfide (A4)			_oamy Muck _! _oamy Gleye			T WILKA I)		•	Shallow Dark Surface (T r (Explain in Remarks)	F12)
	d Below Dark Surfa	ace (A11)		Depleted Mat		2)		_) Ouie	(Explain in Nemarks)	
	ark Surface (A12)	acc (/ (/ / /		Redox Dark S		6)		³ Ir	ndicato	rs of hydrophytic vegetati	on and
	Mucky Mineral (S1)			Depleted Dar	•	•				nd hydrology must be pre	
	Gleyed Matrix (S4)			Redox Depre		, ,				s disturbed or problemation	
Restrictive	Layer (if present)	:									
Type:				-							
Depth (ir	nches):							Hydri	c Soil	Present? Yes 🗌 No	$oxed{oxed}$
Remarks: N	No hydric soils indic	cators obs	served. D	epleted layer	r not entire	elv within 6	inches and	not area	ater tha	n 6 inches thick.	
						,	mones, and	a not groc			
						.,	mones, and	a not groc			
	DGY							. Hot groc			
HYDROLO Wetland Hy	ydrology Indicator	rs:									
HYDROLO Wetland Hy Primary Ind	ydrology Indicator icators (minimum o	rs:	uired; che						Secon	dary Indicators (2 or mor	_
HYDROLO Wetland Hy Primary Ind	ydrology Indicator icators (minimum o Water (A1)	rs:	uired; ch	☐ Water-S	tained Lea	aves (B9) (Secon	dary Indicators (2 or mor ater-Stained Leaves (B9)	_
HYDROLO Wetland Hy Primary Ind Surface High Wa	ydrology Indicator icators (minimum o Water (A1) ater Table (A2)	rs:	uired; cho	☐ Water-S	tained Lea	aves (B9) (Secon	dary Indicators (2 or mor ater-Stained Leaves (B9) 4A, and 4B)	<u>-</u>
HYDROLO Wetland Hy Primary Ind Surface High Wa	ydrology Indicator icators (minimum o Water (A1) ater Table (A2) ion (A3)	rs:	uired; che	☐ Water-S 1, 2, ☐ Salt Cru	tained Lea 4A, and 4 st (B11)	aves (B9) (·			Secon W	dary Indicators (2 or mor ater-Stained Leaves (B9) 4A, and 4B) ainage Patterns (B10)	(MLRA 1, 2,
HYDROLO Wetland Hy Primary Ind Surface High Wa Saturati Water M	ydrology Indicator icators (minimum o Water (A1) ater Table (A2) ion (A3) Marks (B1)	rs:	uired; cho	☐ Water-S 1, 2, ☐ Salt Cru ☐ Aquatic	tained Lea 4A, and 4 st (B11) Invertebra	aves (B9) (o		RA	Secon W Dr	dary Indicators (2 or mor ater-Stained Leaves (B9) 4A, and 4B) ainage Patterns (B10) y-Season Water Table (C	(MLRA 1, 2,
HYDROLO Wetland Hy Primary Ind Surface High Wa Saturati Water M	ydrology Indicator icators (minimum o Water (A1) ater Table (A2) ion (A3) Marks (B1) nt Deposits (B2)	rs:	uired; cho	☐ Water-S 1, 2, ☐ Salt Cru ☐ Aquatic ☐ Hydroge	stained Lea 4A, and 4 st (B11) Invertebra en Sulfide	aves (B9) (44B) utes (B13) Odor (C1)	except MLI	RA	Secon W Dr	dary Indicators (2 or mor ater-Stained Leaves (B9) 4A, and 4B) ainage Patterns (B10) y-Season Water Table (C turation Visible on Aerial	(MLRA 1, 2,
HYDROLO Wetland Hy Primary Ind Surface High Wa Saturati Water M Sedime Drift De	ydrology Indicator icators (minimum of Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3)	rs:	uired; ch	Water-S 1, 2, Salt Cru Aquatic Hydroge Oxidized	tained Lea 4A, and 4 st (B11) Invertebra en Sulfide d Rhizospl	aves (B9) (case (B13)) Odor (C1) neres along	except MLI	RA	Secor W Dr Dr	dary Indicators (2 or mor ater-Stained Leaves (B9) 4A, and 4B) ainage Patterns (B10) y-Season Water Table (C turation Visible on Aerial comorphic Position (D2)	(MLRA 1, 2,
HYDROLO Wetland Hy Primary Ind Surface High Wa Saturati Water M Sedime Drift De Algal Ma	ydrology Indicator icators (minimum of Water (A1) ater Table (A2) ion (A3) Marks (B1) int Deposits (B2) posits (B3) at or Crust (B4)	rs:	uired; ch	Water-S 1, 2, Salt Cru Aquatic Hydroge Oxidized Presend	tained Lea 4A, and 4 st (B11) Invertebra en Sulfide d Rhizospl ee of Redu	aves (B9) (c 4B) ttes (B13) Odor (C1) neres along ced Iron (C	except MLI g Living Roc (4)	RA ots (C3)	Secor W Dr Dr Se GG	dary Indicators (2 or mor ater-Stained Leaves (B9) 4A, and 4B) ainage Patterns (B10) y-Season Water Table (C turation Visible on Aerial comorphic Position (D2) allow Aquitard (D3)	(MLRA 1, 2,
HYDROLO Wetland Hy Primary Ind Surface High Wa Saturati Water M Sedime Drift De Algal Ma	ydrology Indicator icators (minimum of Water (A1) ater Table (A2) fon (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5)	rs:	uired; che	Water-S 1, 2, Salt Cru Aquatic Hydroge Oxidized Presend	stained Lea 4A, and 4 st (B11) Invertebra en Sulfide d Rhizospl ee of Redu Iron Redu	aves (B9) (case (B13)) Odor (C1) neres along ced Iron (Cotton in Tille	except MLI g Living Roc (4) ed Soils (C6	RA ots (C3)	Secon W Dr Dr G Sc G G G G F F	dary Indicators (2 or more ater-Stained Leaves (B9) 4A, and 4B) ainage Patterns (B10) y-Season Water Table (Cuturation Visible on Aerial aemorphic Position (D2) allow Aquitard (D3) ac-Neutral Test (D5)	(MLRA 1, 2,
HYDROLO Wetland Hy Primary Ind Surface High Wa Saturati Water M Sedime Drift De Algal Ma Iron Dep Surface	wdrology Indicator icators (minimum of Water (A1) ater Table (A2) ion (A3) Marks (B1) int Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6)	rs: of one req		Water-S 1, 2, Salt Cru Aquatic Hydroge Oxidized Presend Recent Stunted	stained Lea 4A, and 4 st (B11) Invertebra en Sulfide d Rhizospl ee of Redu iron Redu or Stresse	aves (B9) (case (B13)) Odor (C1) heres along ced Iron (Case	except MLI g Living Roc (4)	RA ots (C3)	Secon W Dr Dr Sa Ge Sr Ra	dary Indicators (2 or mor ater-Stained Leaves (B9) 4A, and 4B) ainage Patterns (B10) y-Season Water Table (C turation Visible on Aerial comorphic Position (D2) allow Aquitard (D3) .C-Neutral Test (D5) iised Ant Mounds (D6) (L	(MLRA 1, 2, 62) Imagery (C9)
HYDROLO Wetland Hy Primary Ind Surface High Wa Saturati Water M Sedime Drift De Algal Ma Iron Dep Surface	ydrology Indicator icators (minimum of Water (A1) ater Table (A2) ion (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6) ion Visible on Aeria	rs: of one req	/ (B7)	Water-S 1, 2, Salt Cru Aquatic Hydroge Oxidized Presend Recent Stunted	stained Lea 4A, and 4 st (B11) Invertebra en Sulfide d Rhizospl ee of Redu Iron Redu	aves (B9) (case (B13)) Odor (C1) heres along ced Iron (Case	except MLI g Living Roc (4) ed Soils (C6	RA ots (C3)	Secon W Dr Dr Sa Ge Sr Ra	dary Indicators (2 or more ater-Stained Leaves (B9) 4A, and 4B) ainage Patterns (B10) y-Season Water Table (Cuturation Visible on Aerial aemorphic Position (D2) allow Aquitard (D3) ac-Neutral Test (D5)	(MLRA 1, 2, 62) Imagery (C9)
HYDROLO Wetland Hy Primary Ind Surface High Wa Saturati Water M Sedime Drift De Algal Ma Iron Dep Surface Inundati	ydrology Indicator icators (minimum of Water (A1) ater Table (A2) ion (A3) Marks (B1) int Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6) ion Visible on Aeria y Vegetated Conca	rs: of one req	/ (B7)	Water-S 1, 2, Salt Cru Aquatic Hydroge Oxidized Presend Recent Stunted	stained Lea 4A, and 4 st (B11) Invertebra en Sulfide d Rhizospl ee of Redu iron Redu or Stresse	aves (B9) (case (B13)) Odor (C1) heres along ced Iron (Case	except MLI g Living Roc (4) ed Soils (C6	RA ots (C3)	Secon W Dr Dr Sa Ge Sr Ra	dary Indicators (2 or mor ater-Stained Leaves (B9) 4A, and 4B) ainage Patterns (B10) y-Season Water Table (C turation Visible on Aerial comorphic Position (D2) allow Aquitard (D3) .C-Neutral Test (D5) iised Ant Mounds (D6) (L	(MLRA 1, 2, 62) Imagery (C9)
HYDROLO Wetland Hy Primary Ind Surface High Wa Saturati Water M Sedime Drift De Algal Ma Iron Dep Surface Inundati Sparsel	ydrology Indicator icators (minimum of Water (A1) ater Table (A2) ion (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6) ion Visible on Aeria y Vegetated Conca	r s: If one required in the	/ (B7) ce (B8)	Water-S 1, 2, Salt Cru Aquatic Hydroge Oxidized Presend Recent Stunted Other (E	tained Lea 4A, and 4 st (B11) Invertebra en Sulfide d Rhizospl e of Redu lron Redu or Stresse explain in f	aves (B9) (case (B13)) Odor (C1) heres along ced Iron (Case	except MLI g Living Roc (4) ed Soils (C6	RA ots (C3)	Secon W Dr Dr Sa Ge Sr Ra	dary Indicators (2 or mor ater-Stained Leaves (B9) 4A, and 4B) ainage Patterns (B10) y-Season Water Table (C turation Visible on Aerial comorphic Position (D2) allow Aquitard (D3) .C-Neutral Test (D5) iised Ant Mounds (D6) (L	(MLRA 1, 2, 62) Imagery (C9)
HYDROLO Wetland Hy Primary Ind Surface High Wa Saturati Water M Sedime Drift De Algal Ma Iron Dep Iron Dep Inundati Sparsel Field Obse Surface Wa	ydrology Indicator icators (minimum of Water (A1) ater Table (A2) ion (A3) Marks (B1) int Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6) ion Visible on Aeria y Vegetated Conca rvations: iter Present?	r s: of one requal Imagery ave Surface	/ (B7) ce (B8)	Water-S 1, 2, Salt Cru Aquatic Hydroge Oxidized Presend Recent Stunted Other (E	tained Leadan AA, and 4 st (B11) Invertebraten Sulfide di Rhizosplate of Reduction Reduction Stresse Explain in Figure 1.	aves (B9) (case (B13)) Odor (C1) neres along ced Iron (Case	except MLI g Living Roc (4) ed Soils (C6	RA ots (C3)	Secon W Dr Dr Sa Ge Sr Ra	dary Indicators (2 or mor ater-Stained Leaves (B9) 4A, and 4B) ainage Patterns (B10) y-Season Water Table (C turation Visible on Aerial comorphic Position (D2) allow Aquitard (D3) .C-Neutral Test (D5) iised Ant Mounds (D6) (L	(MLRA 1, 2, 62) Imagery (C9)
HYDROLO Wetland Hy Primary Ind Surface High Wa Saturati Water M Sedime Drift De Algal Ma Iron Dep Surface Inundati Sparsely Field Obse Surface Wa Water Table	ydrology Indicator icators (minimum of Water (A1) ater Table (A2) ion (A3) Marks (B1) int Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6) ion Visible on Aeria y Vegetated Conca rvations: ater Present? e Present?	r s: of one requal Imagery ave Surface Yes □ Yes ⊠	/ (B7) ce (B8) No ⊠ No □	Water-S 1, 2, Salt Cru Aquatic Hydroge Oxidized Presend Recent Stunted Other (E	tained Leadan And And And And And And And And And An	aves (B9) (cates (B13)) Odor (C1) neres along ced Iron (Cation in Tille ed Plants (I Remarks)	except MLI g Living Roc (4) ed Soils (C6 D1) (LRR A	RA (C3)	Secor W Dr Dr Sa Ge	dary Indicators (2 or mor ater-Stained Leaves (B9) 4A, and 4B) ainage Patterns (B10) y-Season Water Table (Coturation Visible on Aerial comorphic Position (D2) allow Aquitard (D3) a.C-Neutral Test (D5) dised Ant Mounds (D6) (Lost-Heave Hummocks (D	(MLRA 1, 2, C2) Imagery (C9) RR A) 7)
HYDROLO Wetland Hy Primary Ind Surface High Wa Saturati Water M Sedime Drift De Algal Ma Iron Dep Surface Inundati Sparsely Field Obse Surface Wa Water Table Saturation F	ydrology Indicator icators (minimum of Water (A1) ater Table (A2) ion (A3) Marks (B1) int Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6) ion Visible on Aeria y Vegetated Conca rvations: ater Present? Present?	r s: of one requal Imagery ave Surface	/ (B7) ce (B8)	Water-S 1, 2, Salt Cru Aquatic Hydroge Oxidized Presend Recent Stunted Other (E	tained Leadan And And And And And And And And And An	aves (B9) (cates (B13)) Odor (C1) neres along ced Iron (Cation in Tille ed Plants (I Remarks)	except MLI g Living Roc (4) ed Soils (C6 D1) (LRR A	RA (C3)	Secor W Dr Dr Sa Ge	dary Indicators (2 or more ater-Stained Leaves (B9) 4A, and 4B) ainage Patterns (B10) y-Season Water Table (Contraction Visible on Aerial at a comorphic Position (D2) allow Aquitard (D3) a.C-Neutral Test (D5) aised Ant Mounds (D6) (Lost-Heave Hummocks (D6)	(MLRA 1, 2, 62) Imagery (C9)
HYDROLO Wetland Hy Primary Ind Surface High Wa Saturati Water M Sedime Drift De Algal Ma Iron Dep Surface Inundati Sparsel Field Obse Surface Wa Water Table Saturation F	ydrology Indicator icators (minimum of Water (A1) ater Table (A2) ion (A3) Marks (B1) int Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6) ion Visible on Aeria y Vegetated Conca rvations: ater Present? e Present?	rs: of one required in the second in the s	/ (B7) ce (B8) No ⊠ No □ No □	Water-S 1, 2, Salt Cru Aquatic Hydroge Oxidized Presend Recent Stunted Other (E	tained Leadan And And And And And And And And And An	aves (B9) (case (B13)) Odor (C1) neres along ced Iron (Case (Case (B13)) Case (Case (B13)) Case (B13) Case (B1	except MLI g Living Roc (4) ed Soils (C6 (D1) (LRR A	RA ots (C3) ii)	Secon W Dr Dr Sa Ge St Ra Fr	dary Indicators (2 or mor ater-Stained Leaves (B9) 4A, and 4B) ainage Patterns (B10) y-Season Water Table (Coturation Visible on Aerial comorphic Position (D2) allow Aquitard (D3) a.C-Neutral Test (D5) dised Ant Mounds (D6) (Lost-Heave Hummocks (D	(MLRA 1, 2, 2) (Z2) Imagery (C9) RR A) 7)
HYDROLO Wetland Hy Primary Ind Surface High Wa Saturati Water M Sedime Drift De Algal Ma Iron Dep Surface Inundati Sparsel Field Obse Surface Wa Water Table Saturation F (includes ca	ydrology Indicator icators (minimum of Water (A1) ater Table (A2) ion (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6) ion Visible on Aeria y Vegetated Concarvations: ater Present? e Present? Present? apillary fringe) ecorded Data (streat	rs: of one required and limagery ave Surface Yes □ Yes □ Yes □ Yes □ And yes □ Yes □ Yes □	/ (B7) ce (B8) No ⊠ No □ No □ e, monitor	Water-S 1, 2, Salt Cru Aquatic Hydroge Oxidized Presend Recent Stunted Other (E	tained Leadan And And And And And And And And And An	aves (B9) (44B) Ates (B13) Odor (C1) Aneres along ced Iron (Cition in Tille ed Plants (IRemarks)	except MLI g Living Roc (4) ed Soils (C6 D1) (LRR A	RA ots (C3) i) land Hyd	Secor W Dr Dr Sa GG Sr Ra Ra Fr	dary Indicators (2 or mor ater-Stained Leaves (B9) 4A, and 4B) ainage Patterns (B10) y-Season Water Table (Coturation Visible on Aerial comorphic Position (D2) allow Aquitard (D3) a.C-Neutral Test (D5) aised Ant Mounds (D6) (Lost-Heave Hummocks (D	(MLRA 1, 2, 2) (E2) Imagery (C9) RR A) 7)
HYDROLO Wetland Hy Primary Ind Surface High Wa Saturati Water M Sedime Drift De Algal Ma Iron Dep Surface Inundati Sparsel Field Obse Surface Wa Water Table Saturation F (includes ca	ydrology Indicator icators (minimum of Water (A1) ater Table (A2) ion (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6) ion Visible on Aeria y Vegetated Conca rvations: ater Present? Present? Present? apillary fringe)	rs: of one required and limagery ave Surface Yes □ Yes □ Yes □ Yes □ And yes □ Yes □ Yes □	/ (B7) ce (B8) No ⊠ No □ No □ e, monitor	Water-S 1, 2, Salt Cru Aquatic Hydroge Oxidized Presend Recent Stunted Other (E	tained Leadan And And And And And And And And And An	aves (B9) (44B) Ates (B13) Odor (C1) Aneres along ced Iron (Cition in Tille ed Plants (IRemarks)	except MLI g Living Roc (4) ed Soils (C6 D1) (LRR A	RA ots (C3) i) land Hyd	Secor W Dr Dr Sa GG Sr Ra Ra Fr	dary Indicators (2 or mor ater-Stained Leaves (B9) 4A, and 4B) ainage Patterns (B10) y-Season Water Table (Coturation Visible on Aerial comorphic Position (D2) allow Aquitard (D3) a.C-Neutral Test (D5) aised Ant Mounds (D6) (Lost-Heave Hummocks (D	(MLRA 1, 2, 2) (E2) Imagery (C9) RR A) 7)
HYDROLO Wetland Hy Primary Ind Surface High Wa Saturati Water M Sedime Drift De Algal Ma Iron Dep Surface Inundati Sparsel Field Obse Surface Wa Water Table Saturation F (includes ca	ydrology Indicator icators (minimum of Water (A1) ater Table (A2) ion (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6) ion Visible on Aeria y Vegetated Concarvations: ater Present? e Present? Present? apillary fringe) ecorded Data (streat	rs: of one required and limagery ave Surface Yes □ Yes □ Yes □ Yes □ And yes □ Yes □ Yes □	/ (B7) ce (B8) No ⊠ No □ No □ e, monitor	Water-S 1, 2, Salt Cru Aquatic Hydroge Oxidized Presend Recent Stunted Other (E	tained Leadan And And And And And And And And And An	aves (B9) (44B) Ates (B13) Odor (C1) Aneres along ced Iron (Cition in Tille ed Plants (IRemarks)	except MLI g Living Roc (4) ed Soils (C6 D1) (LRR A	RA ots (C3) i) land Hyd	Secor W Dr Dr Sa GG Sr Ra Ra Fr	dary Indicators (2 or mor ater-Stained Leaves (B9) 4A, and 4B) ainage Patterns (B10) y-Season Water Table (Coturation Visible on Aerial comorphic Position (D2) allow Aquitard (D3) a.C-Neutral Test (D5) aised Ant Mounds (D6) (Lost-Heave Hummocks (D	(MLRA 1, 2, 2) (E2) Imagery (C9) RR A) 7)

Project/Site: 1042.0005 Ravensdale	City/County: Ravensdale/King Sampling Date: 12-0								
Applicant/Owner: Ravensdale LLC				State: WA	Sampling Point:	DP-13			
Investigator(s): Emily Swaim									
Landform (hillslope, terrace, etc.): Depression		_ Local relie	ef (concave	, convex, none): Concave	Slor	oe (%): <u>1</u>			
Subregion (LRR): A2	Lat: <u>47.3</u>	3485413		Long: -121.97470297	Datum	1: WGS 84			
Soil Map Unit Name: Beausite gravelly sandy loam									
Are climatic / hydrologic conditions on the site typical for t									
Are Vegetation X, Soil X, or Hydrology X sign	-		•	mal Circumstances" preser		\boxtimes			
Are Vegetation, Soil, or Hydrology na	-			ed, explain any answers ir		_			
SUMMARY OF FINDINGS – Attach site ma				-	·	atures, etc.			
Hydrophytic Vegetation Present? Yes ⊠ No [7								
Hydric Soil Present? Yes ⊠ No [Ξ		e Sampled						
Wetland Hydrology Present? Yes ⊠ No [with	in a Wetlai	nd? Yes⊠ N	∘ ⊔				
Remarks: All three wetland indicators were observed. A Airport). Data plot taken within Wetland F which appears VEGETATION – Use scientific names of pla	s to have beer								
Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?		Dominance Test works					
1. Thuja plicata		Yes	· · ·	Number of Dominant Sp That Are OBL, FACW, o		(A)			
Tsuga heterophylla		Yes		Total Number of Domina					
3	_			Species Across All Strat		(B)			
4				Percent of Dominant Sp	ecies				
Sapling/Shrub Stratum (Plot size: 15 ft)	40	= Total C	over	That Are OBL, FACW, o		(A/B)			
1. Rubus spectabilis	_ 1	Yes	FAC	Prevalence Index work					
2. Rubus armeniacus	_ 1	Yes	<u>FAC</u>	Total % Cover of:					
3				OBL species					
4				FACW species	<u> </u>				
5				FAC species					
Herb Stratum (Plot size: 5 ft)	2	= Total C	over	FACU species					
1				UPL species					
2.				Column Totals:	(A)	(D)			
3.				Prevalence Index	= B/A =				
4				Hydrophytic Vegetatio	n Indicators:				
5	_			☐ Rapid Test for Hydro	ophytic Vegetation	ı			
6				□ Dominance Test is >	·50%				
7				☐ Prevalence Index is					
8				☐ Morphological Adap data in Remarks	tations¹ (Provide s or on a separate :				
10				☐ Wetland Non-Vascu	lar Plants¹				
11.				☐ Problematic Hydropl	, ,	• •			
Woody Vine Stratum (Plot size: 30 ft)	0			¹ Indicators of hydric soil be present, unless distu					
1				Hydrophytic					
2				Vegetation					
% Rara Ground in Harb Stratum 100	0	= Total C	over	Present? Yes	s⊠ No □				
% Bare Ground in Herb Stratum 100 Remarks: Hydrophytic vegetation observed through don	ninance test								
, , , <u> </u>	-								

			p	caca to acot	annone the	a.oato.	OI COIIIIII	m the ab	sence of indicators.)
Depth	Matrix	(Red	ox Feature	s			
(inches)	Color (moist)	%	Colo	r (moist)	%	Type ¹	Loc ²	Textur	e <u>Remarks</u>
0-7	10YR 3/2	100			_=	<u>- </u>		<u>GrSaLo</u>	Gravelly Sandy Loam
<u>7-9</u>	5YR 3/2	98	2.5Y	3/3	22	<u>C</u>	<u>M</u>	<u>GrSaLo</u>	Gravelly Sandy Loam
9-13	10YR 3/2	100						<u>GrSaLo</u>	Gravelly Sandy Loam
<u>13-15</u>	10Y 2/1	100				.=		<u>GrSiLo</u>	Gravelly Silty Loam - Some organics
<u>15-16</u>	5YR 4/6	100						GrSiLo	Gravelly Silty Loam
	Concentration, D=D						ed Sand G		² Location: PL=Pore Lining, M=Matrix.
Hydric Soil	Indicators: (App	licable to	all LRR	s, unless oth	erwise not	ed.)		In	dicators for Problematic Hydric Soils ³ :
☐ Histosol	l (A1)			Sandy Redox ((S5)				2 cm Muck (A10)
☐ Histic E	pipedon (A2)			Stripped Matrix	(S6)				Red Parent Material (TF2)
☐ Black H	istic (A3)		□ L	_oamy Mucky	Mineral (F	l) (excep	t MLRA 1)] Very Shallow Dark Surface (TF12)
	en Sulfide (A4)			_oamy Gleyed			,		Other (Explain in Remarks)
	d Below Dark Surfa	ace (A11)		Depleted Matri	-	,			,
	ark Surface (A12)	400 (7111)		Redox Dark Su				3lr	ndicators of hydrophytic vegetation and
	Mucky Mineral (S1)			Depleted Dark	, ,	7)		"	wetland hydrology must be present,
	• , ,	1		Redox Depres	•	')			unless disturbed or problematic.
	Gleyed Matrix (S4) Layer (if present)	-		Redox Depres	SIONS (FO)				unless disturbed or problematic.
Type: Depth (ir	nches).			-					- 0-11 P
. `	,							Hyari	ic Soil Present? Yes ⊠ No □
Remarks: H	lydric soil indicator	A4 observ	ed.						
HYDROLO)GY								
HYDROLC		rs:							
Wetland Hy	drology Indicator		uired: che	eck all that app	olv)				Secondary Indicators (2 or more required)
Wetland Hy Primary Indi	drology Indicatoricators (minimum c		iired; che			as (R0) (e	avcent MI	ΡΛ	Secondary Indicators (2 or more required) Water Stained Leaves (R0) (MLRA 1.2)
Wetland Hy Primary Indi ☑ Surface	ydrology Indicator icators (minimum o Water (A1)		iired; che	☐ Water-Sta	ained Leav		except MLI	RA	☐ Water-Stained Leaves (B9) (MLRA 1, 2,
Wetland Hy Primary Indi ☐ Surface ☐ High Wa	ydrology Indicator icators (minimum o Water (A1) ater Table (A2)		iired; che	☐ Water-Sta	ained Leav		except MLI	RA	☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
Wetland Hy Primary Indi Surface High Wa Saturati	ydrology Indicator icators (minimum o Water (A1) ater Table (A2) on (A3)		iired; che	☐ Water-Sta 1, 2, 4 ☐ Salt Crust	ained Leav I A, and 4B t (B11))	except MLI	RA	 Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) □ Drainage Patterns (B10)
Wetland Hy Primary Indi Surface High Wa Saturati Water M	ydrology Indicator icators (minimum o Water (A1) ater Table (A2) on (A3) Marks (B1)		iired; che	☐ Water-Sta 1, 2, 4 ☐ Salt Crust ☐ Aquatic Ir	ained Leav IA, and 4B t (B11) nvertebrate) s (B13)	except MLI	RA	 □ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) □ Drainage Patterns (B10) □ Dry-Season Water Table (C2)
Wetland Hy Primary Indi Surface High Wa Saturati Water № Sedimen	ydrology Indicator icators (minimum o Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2)		nired; che	☐ Water-Sta 1, 2, 4 ☐ Salt Crusi ☐ Aquatic Ir ☑ Hydrogen	ained Leav IA, and 4B t (B11) nvertebrate Sulfide O) s (B13) dor (C1)			 □ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) □ Drainage Patterns (B10) □ Dry-Season Water Table (C2) □ Saturation Visible on Aerial Imagery (C9)
Wetland Hy Primary Indi Surface High Wa Saturati Water M Sedimed Drift De	ydrology Indicator icators (minimum o Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3)		tired; che	☐ Water-Sta 1, 2, 4 ☐ Salt Crust ☐ Aquatic Ir ☐ Hydrogen ☐ Oxidized	ained Leav IA, and 4B I (B11) Invertebrate I Sulfide Oo Rhizosphe) s (B13) dor (C1) res along	Living Roo		 Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) □ Drainage Patterns (B10) □ Dry-Season Water Table (C2) □ Saturation Visible on Aerial Imagery (C9) □ Geomorphic Position (D2)
Wetland Hy Primary Indi Surface High Wa Saturati Water № Sedimet Drift Det Algal Ma	ydrology Indicator icators (minimum of Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4)		iired; che	□ Water-Sta 1, 2, 4 □ Salt Crust □ Aquatic Ir □ Hydrogen □ Oxidized □ Presence	Ained Leaver III And 4B to (B11) Invertebrate III Sulfide Oo Rhizosphe of Reduce	s (B13) dor (C1) res along d Iron (C	Living Roo 4)	ots (C3)	 Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) □ Drainage Patterns (B10) □ Dry-Season Water Table (C2) □ Saturation Visible on Aerial Imagery (C9) □ Geomorphic Position (D2) □ Shallow Aquitard (D3)
Wetland Hy Primary Indi Surface High Wa Saturati Water № Sedimed Drift Ded Algal Ma Iron Dep	vdrology Indicator icators (minimum of Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5)		uired; che	□ Water-Star 1, 2, 4 □ Salt Crust □ Aquatic Ir ☑ Hydrogen □ Oxidized □ Presence □ Recent Ira	ained Leav IA, and 4B t (B11) nvertebrate I Sulfide Or Rhizosphe of Reduce on Reducti	s (B13) dor (C1) res along d Iron (C	Living Roo 4) d Soils (C6	ots (C3)	 Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) □ Drainage Patterns (B10) □ Dry-Season Water Table (C2) □ Saturation Visible on Aerial Imagery (C9) □ Geomorphic Position (D2) □ Shallow Aquitard (D3) □ FAC-Neutral Test (D5)
Wetland Hy Primary Indi Surface High Wa Saturati Water № Sedimed Drift Ded Algal Ma Iron Dep	ydrology Indicator icators (minimum of Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4)		ired; che	Usater-Star 1, 2, 4 □ Salt Crust □ Aquatic Ir □ Hydrogen □ Oxidized □ Presence □ Recent Ir □ Stunted o	ained Leav IA, and 4B t (B11) overtebrate a Sulfide Oo Rhizosphe of Reduce on Reducti or Stressed	s (B13) dor (C1) res along d Iron (C on in Tille Plants (E	Living Roo 4)	ots (C3)	 Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) □ Drainage Patterns (B10) □ Dry-Season Water Table (C2) □ Saturation Visible on Aerial Imagery (C9) □ Geomorphic Position (D2) □ Shallow Aquitard (D3)
Wetland Hy Primary Indi Surface High Wa Saturati Water M Sedimen Drift Dep Algal Ma Iron Dep	vdrology Indicator icators (minimum of Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5)	of one requ		Usater-Star 1, 2, 4 □ Salt Crust □ Aquatic Ir □ Hydrogen □ Oxidized □ Presence □ Recent Ir □ Stunted o	ained Leav IA, and 4B t (B11) nvertebrate I Sulfide Or Rhizosphe of Reduce on Reducti	s (B13) dor (C1) res along d Iron (C on in Tille Plants (E	Living Roo 4) d Soils (C6	ots (C3)	 Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) □ Drainage Patterns (B10) □ Dry-Season Water Table (C2) □ Saturation Visible on Aerial Imagery (C9) □ Geomorphic Position (D2) □ Shallow Aquitard (D3) □ FAC-Neutral Test (D5)
Wetland Hy Primary Indi Surface High Wa Saturati Water M Sediment Drift Dep Algal Ma Iron Dep Surface Inundati	vdrology Indicators icators (minimum of Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6)	of one requ	(B7)	Usater-Star 1, 2, 4 □ Salt Crust □ Aquatic Ir □ Hydrogen □ Oxidized □ Presence □ Recent Ir □ Stunted o	ained Leav IA, and 4B t (B11) overtebrate a Sulfide Oo Rhizosphe of Reduce on Reducti or Stressed	s (B13) dor (C1) res along d Iron (C on in Tille Plants (E	Living Roo 4) d Soils (C6	ots (C3)	 Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) □ Drainage Patterns (B10) □ Dry-Season Water Table (C2) □ Saturation Visible on Aerial Imagery (C9) □ Geomorphic Position (D2) □ Shallow Aquitard (D3) □ FAC-Neutral Test (D5) □ Raised Ant Mounds (D6) (LRR A)
Wetland Hy Primary Indi Surface High Wa Saturati Water M Sediment Drift Dep Algal Ma Iron Dep Surface Inundati	wdrology Indicator icators (minimum of Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6) ion Visible on Aeria y Vegetated Conca	of one requ	(B7)	Usater-Star 1, 2, 4 □ Salt Crust □ Aquatic Ir □ Hydrogen □ Oxidized □ Presence □ Recent Ir □ Stunted o	ained Leav IA, and 4B t (B11) overtebrate a Sulfide Oo Rhizosphe of Reduce on Reducti or Stressed	s (B13) dor (C1) res along d Iron (C on in Tille Plants (E	Living Roo 4) d Soils (C6	ots (C3)	 Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) □ Drainage Patterns (B10) □ Dry-Season Water Table (C2) □ Saturation Visible on Aerial Imagery (C9) □ Geomorphic Position (D2) □ Shallow Aquitard (D3) □ FAC-Neutral Test (D5) □ Raised Ant Mounds (D6) (LRR A)
Wetland Hy Primary Indi Surface High Wa Saturati Water № Sedimel Drift Del Algal Ma Iron Dep Surface Inundati Sparsely	wdrology Indicator icators (minimum of Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6) ion Visible on Aeria y Vegetated Conca	of one requ	(B7)	□ Water-Star 1, 2, 4 □ Salt Crust □ Aquatic Ir ☑ Hydrogen □ Oxidized □ Presence □ Recent Ira □ Stunted o	ained Leav IA, and 4B t (B11) nvertebrate s Sulfide Or Rhizosphe of Reduce on Reducti r Stressed	s (B13) dor (C1) res along d Iron (C on in Tille Plants (E	Living Roo 4) d Soils (C6	ots (C3)	 Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) □ Drainage Patterns (B10) □ Dry-Season Water Table (C2) □ Saturation Visible on Aerial Imagery (C9) □ Geomorphic Position (D2) □ Shallow Aquitard (D3) □ FAC-Neutral Test (D5) □ Raised Ant Mounds (D6) (LRR A)
Wetland Hy Primary Indi Surface High Wa Saturati Water № Sedimel Drift Del Algal Ma Iron Dep Surface Inundati Sparsely	ydrology Indicator icators (minimum of Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6) ion Visible on Aeria y Vegetated Conca rvations: ter Present?	of one requ al Imagery ave Surface	(B7) e (B8)		ained Leav IA, and 4B t (B11) nvertebrate a Sulfide Oc Rhizosphe of Reduce on Reducti or Stressed plain in Re	s (B13) dor (C1) res along d Iron (C on in Tille Plants (E marks)	Living Roo 4) d Soils (C6	ots (C3)	 Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) □ Drainage Patterns (B10) □ Dry-Season Water Table (C2) □ Saturation Visible on Aerial Imagery (C9) □ Geomorphic Position (D2) □ Shallow Aquitard (D3) □ FAC-Neutral Test (D5) □ Raised Ant Mounds (D6) (LRR A)
Wetland Hy Primary Indi Surface High Wa Saturati Water M Sedimer Drift Der Algal Ma Iron Der Surface Inundati Sparsely Field Obser Surface Wa Water Table Saturation F	wdrology Indicator icators (minimum of Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6) ion Visible on Aeria y Vegetated Concarvations: ater Present? Present?	of one requ al Imagery ave Surface Yes ⊠	(B7) e (B8) No 🗆		ained Leav IA, and 4B I (B11) Invertebrate I Sulfide Or Rhizosphe of Reduce on Reducti or Stressed plain in Re es): +0.5 es): to surfa	s (B13) dor (C1) res along d Iron (C on in Tille Plants (C marks)	Living Roo 4) d Soils (C6 01) (LRR A	ots (C3) 6) N	 Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) □ Drainage Patterns (B10) □ Dry-Season Water Table (C2) □ Saturation Visible on Aerial Imagery (C9) □ Geomorphic Position (D2) □ Shallow Aquitard (D3) □ FAC-Neutral Test (D5) □ Raised Ant Mounds (D6) (LRR A)
Wetland Hy Primary Indi Surface High Wa Saturati Water M Sedimer Drift De Algal Ma Iron Dep Inundati Sparsely Field Obset Surface Wa Water Table Saturation F (includes ca	ydrology Indicator icators (minimum of Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6) ion Visible on Aeria y Vegetated Conca rvations: ter Present? e Present? publicators (minimum of present? apillary fringe)	al Imagery ave Surface Yes ⊠ Yes ⊠ Yes ⊠	(B7) e (B8) No No No No No		ained Leav IA, and 4B t (B11) nvertebrate Sulfide Oo Rhizosphe of Reduce on Reducti or Stressed plain in Re es): +0.5 es): to surfa es): to surfa	s (B13) dor (C1) res along d Iron (C on in Tille Plants (C marks)	Living Roo 4) d Soils (C6 01) (LRR A	ots (C3) 6) N	Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) □ Drainage Patterns (B10) □ Dry-Season Water Table (C2) □ Saturation Visible on Aerial Imagery (C9) □ Geomorphic Position (D2) □ Shallow Aquitard (D3) □ FAC-Neutral Test (D5) □ Raised Ant Mounds (D6) (LRR A) □ Frost-Heave Hummocks (D7)
Wetland Hy Primary Indi Surface High Wa Saturati Water M Sedimer Drift De Algal Ma Iron Dep Inundati Sparsely Field Obset Surface Wa Water Table Saturation F (includes ca	wdrology Indicator icators (minimum of Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6) ion Visible on Aeria y Vegetated Concarvations: ater Present? Present?	al Imagery ave Surface Yes ⊠ Yes ⊠ Yes ⊠	(B7) e (B8) No No No No No		ained Leav IA, and 4B t (B11) nvertebrate Sulfide Oo Rhizosphe of Reduce on Reducti or Stressed plain in Re es): +0.5 es): to surfa es): to surfa	s (B13) dor (C1) res along d Iron (C on in Tille Plants (C marks)	Living Roo 4) d Soils (C6 01) (LRR A	ots (C3) 6) N	Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) □ Drainage Patterns (B10) □ Dry-Season Water Table (C2) □ Saturation Visible on Aerial Imagery (C9) □ Geomorphic Position (D2) □ Shallow Aquitard (D3) □ FAC-Neutral Test (D5) □ Raised Ant Mounds (D6) (LRR A) □ Frost-Heave Hummocks (D7)
Wetland Hy Primary Indi Surface High Wa Saturati Water M Sedimel Drift Del Algal Ma Iron Dep Surface Inundati Sparsel Field Obsel Surface Wa Water Table Saturation F (includes ca	ydrology Indicator icators (minimum of Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6) ion Visible on Aeria y Vegetated Conca rvations: ter Present? e Present? publicators (minimum of present? apillary fringe)	al Imagery ave Surface Yes ⊠ Yes ⊠ Yes ⊠ am gauge,	(B7) e (B8) No No No No monitor	Water-Sta 1, 2, 4 I, 2, 4 Salt Crust Aquatic Ir Hydrogen Oxidized Presence Recent Ir Stunted o Other (Ex Depth (inche Depth (inche Depth (inche ling) well, aerial	ained Leav IA, and 4B I (B11) Invertebrate I Sulfide Or Rhizosphe of Reduce on Reducti or Stressed uplain in Re es): +0.5 es): to surfa es): to surfa I photos, pi	s (B13) dor (C1) res along d Iron (C on in Tille Plants (E marks)	Living Roo 4) d Soils (C6 01) (LRR A	ots (C3) 6) N	Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) □ Drainage Patterns (B10) □ Dry-Season Water Table (C2) □ Saturation Visible on Aerial Imagery (C9) □ Geomorphic Position (D2) □ Shallow Aquitard (D3) □ FAC-Neutral Test (D5) □ Raised Ant Mounds (D6) (LRR A) □ Frost-Heave Hummocks (D7)
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Project/Site: 1042.0005 Ravensdale	(City/County	y: <u>Ravensda</u>	Sampling Date: 12-04-2017				
Applicant/Owner: Ravensdale LLC	icant/Owner: <u>Ravensdale LLC</u>							
Investigator(s): Richard Peel, Emily Swaim			Section, To	ownship, Range: <u>01, 22N, (</u>	06E & 07E			
Landform (hillslope, terrace, etc.): Hillslope		Local relie	ef (concave,	convex, none): Convex	Slope (%): <u>5</u>			
Subregion (LRR): A2			•	·				
Soil Map Unit Name: <u>Beausite gravelly sandy loam</u>								
Are climatic / hydrologic conditions on the site typical for this								
Are Vegetation, Soil, or Hydrology sign	-		•		ent? Yes⊠ No□			
Are Vegetation, Soil, or Hydrology natu				ed, explain any answers in				
SUMMARY OF FINDINGS – Attach site map					•			
Hydrophytic Vegetation Present? Yes ☐ No ☒								
Hydric Soil Present? Yes ☐ No ☒			e Sampled		_			
Wetland Hydrology Present? Yes ☐ No ☒		with	in a Wetlar	nd? Yes ☐ No	o 🔀			
Remarks: No wetland criteria were observed. Accumulated		n 134% of	normal for	2017/2018 water year (Sea	a-Tac International Airport).			
Data plto collected in upland area between Wetlands D and	a F.							
NEGETATION . Her assemble manner of plant	-							
VEGETATION – Use scientific names of plant		Deminent	Indicator	Deminance Test weeks				
Tree Stratum (Plot size: 30 ft)	Absolute <u>% Cover</u>			Dominance Test works Number of Dominant Sp				
Pseudotsuga menziesii	50	Yes	<u>FACU</u>	That Are OBL, FACW, or				
2. Alnus rubra	30	Yes	FAC	Total Number of Domina	ant			
3				Species Across All Strata				
4				Percent of Dominant Spe	ecies			
Sapling/Shrub Stratum (Plot size: 15 ft)	80	= Total C	over		r FAC: 40 (A/B)			
1. Rubus spectabilis	40	Yes	FAC	Prevalence Index work	sheet:			
2. Acer circinatum				Total % Cover of:	Multiply by:			
3				OBL species 0	x 1 = <u>0</u>			
4			-		x 2 = <u>0</u>			
5					x 3 = <u>246</u>			
Herb Stratum (Plot size: 5 ft)	42	= Total C	over		x 4 = <u>332</u>			
1. Rubus ursinus	<u>15</u>	Yes	FACU	*	x = 0			
Polystichum munitum	10	Yes	FACU	Column Totals: 165	(A) <u>578</u> (B)			
3. Agrastis capillaris	5	No	FAC	Prevalence Index	= B/A = 3.5			
4. Geranium robertianum	5	No	FACU	Hydrophytic Vegetation	n Indicators:			
5. Tolmiea menziesii	5	No	FAC	Rapid Test for Hydro	. , .			
6. Pteridium aquilinum			FACU	☐ Dominance Test is >				
7				☐ Prevalence Index is:				
8					tations¹ (Provide supporting or on a separate sheet)			
9				☐ Wetland Non-Vascul	ar Plants ¹			
10				☐ Problematic Hydroph	nytic Vegetation¹ (Explain)			
11	42				and wetland hydrology must			
Woody Vine Stratum (Plot size: 30 ft)		10141 0		be present, unless distur	bed or problematic.			
1				Hydrophytic				
2				Vegetation				
% Bare Ground in Herb Stratum	0	= Total C	over	Present? Yes	s □ No ⊠			
Remarks: Hydrophytic vegetation not observed, determine	d through pi	revalence i	ndex works	l heet				

Profile Desc	cription: (Describe	e to the	depth n	eeded to docu	ment the	indicator	or confirn	n the abso	ence of indicators.)
Depth	Matrix	0/			x Feature		. 2	- .	5 .
(inches)	Color (moist)	%	Cold	or (moist)	%	Type ¹	Loc ²	Texture	
0-6	10YR 2/2	100	_ =_				-	GrSiLo	Gravelly Silty Loam
6-13	10YR 3/4	100	_ =_					<u>GrSaLo</u>	Gravelly Sandy Loam
<u>13-16</u>	10YR 4/4	100	_ =		_=			GrSaLo	Gravelly Sandy Loam
					-				
-					-		-	-	<u> </u>
					-			-	
	oncentration, D=De						ed Sand G		² Location: PL=Pore Lining, M=Matrix.
-	Indicators: (Appli	cable to				ea.)			icators for Problematic Hydric Soils ³ :
☐ Histosol	(A1) pipedon (A2)			Sandy Redox (S Stripped Matrix					2 cm Muck (A10) Red Parent Material (TF2)
☐ Black Hi			_	Loamy Mucky N	` '	l) (evcen	MIRA1)		Very Shallow Dark Surface (TF12)
	n Sulfide (A4)			Loamy Gleyed			. WILKA I)		Other (Explain in Remarks)
	Below Dark Surfac	ce (A11)		Depleted Matrix	•	,			Caror (Explain in Romano)
	ark Surface (A12)	30 (/ (1 1)		Redox Dark Su				3Inc	licators of hydrophytic vegetation and
	lucky Mineral (S1)			Depleted Dark	` ,	7)			wetland hydrology must be present,
-	leyed Matrix (S4)			Redox Depress	•	,			unless disturbed or problematic.
	Layer (if present):			·					·
Type:				_					
Depth (in	ches):			-				Hydric	Soil Present? Yes ☐ No ☒
Remarks: No	o hydric indicators o	bserved	l <u>.</u>						
	•								
HYDROLO	GY								
Wetland Hy	drology Indicators	s:							
Primary Indi	cators (minimum of	one req	uired; ch	eck all that app	ly)				Secondary Indicators (2 or more required)
☐ Surface	Water (A1)			☐ Water-Sta	ined Leave	es (B9) (e	xcept MLF	RA [Water-Stained Leaves (B9) (MLRA 1, 2,
☐ High Wa	ter Table (A2)			1, 2, 4	A, and 4B)			4A, and 4B)
☐ Saturation	on (A3)			☐ Salt Crust	(B11)				☐ Drainage Patterns (B10)
☐ Water M	arks (B1)			☐ Aquatic In	vertebrate	s (B13)			☐ Dry-Season Water Table (C2)
☐ Sedimer	nt Deposits (B2)			☐ Hydrogen	Sulfide Od	dor (C1)			☐ Saturation Visible on Aerial Imagery (C9)
☐ Drift Dep	oosits (B3)			☐ Oxidized F	Rhizosphei	res along	Living Roo	ots (C3)	Geomorphic Position (D2)
☐ Algal Ma	t or Crust (B4)			☐ Presence	of Reduce	d Iron (C4	1)		☐ Shallow Aquitard (D3)
☐ Iron Dep	osits (B5)			☐ Recent Iro	n Reductio	on in Tille	d Soils (C6	S) [☐ FAC-Neutral Test (D5)
☐ Surface	Soil Cracks (B6)			☐ Stunted or	Stressed	Plants (D	1) (LRR A)) [Raised Ant Mounds (D6) (LRR A)
	on Visible on Aerial	Imagery	(B7)	☐ Other (Exp			, , ,		☐ Frost-Heave Hummocks (D7)
☐ Sparsely	Vegetated Concav	e Surfac	ce (B8)			,			
Field Obser									
Surface Wat		Yes 🗌	No 🛛	Depth (inches	s):				
Water Table		Yes 🗌	No ⊠	Depth (inches					
Saturation P		Yes 🗌	No ⊠	Depth (inches	•		Wetl	and Hydr	ology Present? Yes ☐ No ⊠
(includes ca	pillary fringe)				•			-	
Describe Re	corded Data (strear	m gauge	, monito	ring well, aerial	photos, pr	evious in:	spections),	if availabl	e:
Remarks: No	o primary or second	lary wetl	and hydr	ology indicators	were obs	served.			

Project/Site: 1042.0005 Ravensdale	(City/C	County: <u>Ravensd</u>	ale/King	Sampl	Sampling Date: 12-04-2017	
Applicant/Owner: Ravensdale LLC				State: WA	Sampl	ling Point: DP-1	5
Investigator(s): Richard Peel, Emily Swaim			Section, T	ownship, Range: <u>01, 22N, (</u>	06E & C)7E	
Landform (hillslope, terrace, etc.): Valley floor		Loca	al relief (concave	, convex, none): Concave		Slope (%	o): <u>0</u>
Subregion (LRR): A2	Lat: <u>47.3</u>	53008	830	Long: <u>-121.98065157</u>		Datum: Wo	GS 84
Soil Map Unit Name: Beausite gravelly sandy loam				NWI classifica	tion: <u>N/</u>	Ά	
Are climatic / hydrologic conditions on the site typical for thi	s time of yea	ır? Y	res □ No ☒ (If no, explain in Remarks.)			
Are Vegetation X, Soil X, or Hydrology X sigr	nificantly dist	urbec	d? Are "No	ormal Circumstances" prese	ent? Y	′es □ No ⊠	
Are Vegetation, Soil, or Hydrology natu	urally probler	natic'	? (If need	led, explain any answers in	Rema	rks.)	
SUMMARY OF FINDINGS – Attach site map				ocations, transects,	impo	rtant featur	es, etc.
Hydrophytic Vegetation Present? Yes ☐ No ☒			Is the Sample	1 Area			
Hydric Soil Present? Yes ☐ No ☒			within a Wetla		o 🖂		
Wetland Hydrology Present? Yes ☐ No ☒				_			
Remarks: No wetland criteria observed. Accumulated prec taken along railroad in area representative of Trench I.	cipitation 134	1% of	normal for 2017	/2018 water year (Sea-Tac	Interna	ational Airport).	Data
VEGETATION – Use scientific names of plan	ıts.						
Troe Stratum (Plot size: 20 ft)			ninant Indicator ecies? Status	Dominance Test works	heet:		
Tree Stratum (Plot size: 30 ft) 1				Number of Dominant Sp That Are OBL, FACW, o		0	(A)
3				Total Number of Domina Species Across All Strat		1	(B)
4			otal Cover	Percent of Dominant Sports That Are OBL, FACW, o	ecies r FAC:	0	(A/B)
Sapling/Shrub Stratum (Plot size: 15 ft)				Prevalence Index work	choot:		
1				Total % Cover of:			
3.				OBL species			
4.				FACW species			
5				FAC species			
		= T	otal Cover	FACU species	;	x 4 =	
Herb Stratum (Plot size: <u>5 ft</u>)	_	.,		UPL species			
1. Plantago lanceolata			<u>FACU</u>	Column Totals:	(/	A)	(B)
2				Prevalence Index	= B/A =	=	
3 4				Hydrophytic Vegetation			
5				☐ Rapid Test for Hydro			
6.				☐ Dominance Test is >	50%		
7				☐ Prevalence Index is	≤3.0 ¹		
8. 9.				☐ Morphological Adapt data in Remarks			
10				☐ Wetland Non-Vascul			
11.				☐ Problematic Hydroph	•		,
Woody Vine Stratum (Plot size: <u>30 ft</u>)			otal Cover	¹ Indicators of hydric soil be present, unless distu			/ must
1				Hydrophytic			
2				Vegetation	_	_	
% Bare Ground in Herb Stratum 95	0	= T	otal Cover	Present? Yes	i □ N	lo ⊠	
% Bare Ground in Herb Stratum <u>95</u> Remarks: Hydrophytic vegetation not observed. Coal pres	ent.						

Profile Desc	cription: (Describe	to the	lepth ne	eded to docu	ment the ir	ndicator	or confirn	n the ab	sence	e of indicators.)
Depth	Matrix (acciet)	0/			x Features		12	T 4		Demode
(inches)	Color (moist)	<u>%</u>	Colo	r (moist)	<u></u> %	Type'	Loc ²	<u>Textu</u>	re	<u>Remarks</u>
0-4	N 2.5/0	100						Fill/Co	al	Fill and Coal mix
-	-	_								
		_								
										_
17							-1.01.0-		21 -	antique Di Dana Linin e M Matrix
	oncentration, D=De Indicators: (Appli						ed Sand Gi			cation: PL=Pore Lining, M=Matrix. prs for Problematic Hydric Soils ³ :
l		cable to		Sandy Redox (u.,				n Muck (A10)
	ipedon (A2)			Stripped Matrix				_		Parent Material (TF2)
☐ Black His				_oamy Mucky N	` '	(except	MLRA 1)	_		y Shallow Dark Surface (TF12)
	n Sulfide (A4)			_oamy Gleyed I			,			er (Explain in Remarks)
	l Below Dark Surfac	ce (A11)		Depleted Matrix				_		,
☐ Thick Da	rk Surface (A12)	. ,		Redox Dark Su				3	ndicate	ors of hydrophytic vegetation and
☐ Sandy M	lucky Mineral (S1)			Depleted Dark	Surface (F7	')			wetla	and hydrology must be present,
	leyed Matrix (S4)		I	Redox Depress	ions (F8)				unles	ss disturbed or problematic.
	Layer (if present):									
Type:				-						
Depth (in	ches):							Hydr	ic Soi	l Present? Yes ☐ No ⊠
Remarks: Co	ompact gravel fill wi	th coal a	depth c	of 4 inches. Hyd	lric soil indi	cators no	t observed	d.		
HYDROLO	GV.									
-										
_	drology Indicators		عام بامسا		h. A				C	and any landications (2) an assure many install
	cators (minimum of	one requ	irea; cne			(DO) (ndary Indicators (2 or more required)
	Water (A1)			☐ Water-Stai		, , ,	xcept MLF	KA	Ш V\	Vater-Stained Leaves (B9) (MLRA 1, 2,
	ter Table (A2)				A, and 4B)					4A, and 4B)
☐ Saturation	` '			☐ Salt Crust	` '	(D.10)				Prainage Patterns (B10)
☐ Water M	, ,			Aquatic Inv		. ,				Pry-Season Water Table (C2)
	t Deposits (B2)			Hydrogen				. (00)		aturation Visible on Aerial Imagery (C9)
	osits (B3)				Rhizosphere	_	_	is (C3)	_	Geomorphic Position (D2)
_	t or Crust (B4)			☐ Presence		•	•			hallow Aquitard (D3)
-	osits (B5)			☐ Recent Iro			•	•		AC-Neutral Test (D5)
	Soil Cracks (B6)	l	(DZ)	☐ Stunted or		-	1) (LRR A))		daised Ant Mounds (D6) (LRR A)
	on Visible on Aerial			☐ Other (Exp	olain in Ren	narks)			⊔⊦	rost-Heave Hummocks (D7)
	Vegetated Concav	e Suriac	e (DO)							
Field Obser		v 🗖		5 " " "	\ . 0.05.4					
Surface Wat		Yes ⊠	No 🗆	Depth (inches						
Water Table		Yes 🗌	No ⊠	Depth (inches	•					
Saturation P		Yes 🗌	No 🛚	Depth (inches	s):		Wetl	and Hy	drolog	y Present? Yes ☐ No ⊠
(includes car Describe Re	corded Data (strear	n gauge	monitor	ing well. aerial	photos. pre	vious ins	pections)	if availa	ble:	
		J90,		J, 25.141	,, pro		,,,			
Remarks: No	nrimary or second	ary wetle	nd hydr	nlogy indicators	were obse	arved OF	served hv	drology	was n	erched atop compacted gravel fill and is
	e of a high water tal					, vca. Ol	Joor vou Hy	arology	was p	oronou atop compacted graver illi and is
	-		j							

Project/Site: 1042.0005 Ravensdale	(City/County	_{/:} Ravesr	ndale/King	Sampling Date: 12/7/17	
Applicant/Owner: Ravensdale LLC				State: WA	Sampling Point: DP-16	
				ownship, Range: <u>01, 22N</u>		
Landform (hillslope, terrace, etc.): Hillslope		Local relie	ef (concave,	convex, none): None	Slope (%): 7	
Subregion (LRR): A2						
Soil Map Unit Name: Beausite gravelly sandy loam				NWI classificat	tion: N/A	
Are climatic / hydrologic conditions on the site typical for this						
Are Vegetation <u> </u>	ificantly dist	urbed?	Are "No	ormal Circumstances" pres	ent? Yes ☐ No 🗵	
Are Vegetation, Soil, or Hydrology natu	rally problen	natic?	(If neede	ed, explain any answers in	Remarks.)	
SUMMARY OF FINDINGS - Attach site map s	showing	samplin	g point lo	ocations, transects,	important features, etc.	
Hydrophytic Vegetation Present? Yes ☐ No 🗵						
Hydric Soil Present? Yes ☐ No 🗵			e Sampled		_	
Wetland Hydrology Present? Yes ☒ No ☐		with	in a Wetlar	nd? Yes ☐ No) X	
Remarks: Not all three wetland criteria observed;	only wetl	and hydi	rology crit	eria observed Accum	nulated precipitation	
128% of normal for 2017/2018 water ye	ear (Sea-	Tac Inter	national /	Airport). Data plot tak	en in Trench G.	
VEGETATION – Use scientific names of plant	s.					
Trace Christians (Diet sines 20 ft)		Dominant		Dominance Test works	heet:	
Tree Stratum (Plot size: 30 ft) 1. Acer macrophyllum	<u>% Cover</u> 20	Yes	FACU	Number of Dominant Spe That Are OBL, FACW, or		
2 Alnus rubra	10	Yes	FAC	That Are OBL, FACW, or	FAC. <u>1</u> (A)	
3				Total Number of Domina Species Across All Strata	_	
4				·		
	30	= Total C	over	Percent of Dominant Spe That Are OBL, FACW, or		
Sapling/Shrub Stratum (Plot size: 15 ft)				Prevalence Index work	shoot:	
1				Total % Cover of:		
2					x 1 = 0	
4					x 2 = 0	
5.					x 3 = 45	
	0	= Total C	over		x 4 = 220	
Herb Stratum (Plot size: 5 ft)				UPL species	x 5 = <u>0</u>	
1. Polystichum munitum	25	Yes		Column Totals: 70	(A) <u>265</u> (B)	
2. Geranium robertianum	10	Yes	FACU	Prevalence Index :	- B/A - 3.79	
3. Tolmiea menziesii	5	No	FAC	Hydrophytic Vegetation		
4				Rapid Test for Hydro		
5				Dominance Test is >		
6				☐ Prevalence Index is:		
7					ations ¹ (Provide supporting	
8 9					or on a separate sheet)	
10				☐ Wetland Non-Vascul	ar Plants ¹	
11.				☐ Problematic Hydroph	nytic Vegetation¹ (Explain)	
	40	= Total C	over	¹ Indicators of hydric soil is be present, unless distur	and wetland hydrology must	
Woody Vine Stratum (Plot size: 30 ft)				be present, unless distur	bed of problematic.	
1				Hydrophytic		
2				Vegetation		
% Bare Ground in Herb Stratum 60	0	= Total C	over	Present? Yes	□ No ⊠	
Remarks:		!				
No hydrophytic vegetation criteria obse	erved acco	ording to	prevalen	ce test.		

	ription: (Describe	to the d	epth ne				or confirm	n the abs	ence o	of indicators.)	
Depth (inches)	Matrix Color (moist)	%	Colo	r (moist)	ox Feature %	<u>s</u> Type¹	Loc ²	Texture	9	Rema	arks
0-16	N 2.5/0	100	-	(-	-	Coal		Coal	<u>.</u>
	-		- —								
·											-
·	-		- —								
¹Tyne: C=C	oncentration, D=De	nletion R	M=Red	uced Matrix C	S=Covere	d or Coate	ed Sand Gr	raine	² l oc:	ation: PL=Pore Li	ning M=Matrix
	Indicators: (Appli						eu Sanu Gi			s for Problemati	
Histosol				Sandy Redox (·,				Muck (A10)	
	ipedon (A2)			Stripped Matrix						Parent Material (T	F2)
☐ Black His				Loamy Mucky N	. ,) (except	MLRA 1)			Shallow Dark Surf	,
	n Sulfide (A4)			Loamy Gleyed			,		-	(Explain in Rema	
	Below Dark Surfac	ce (A11)		Depleted Matrix							•
☐ Thick Da	rk Surface (A12)		□ F	Redox Dark Su	rface (F6)			3In	dicator	s of hydrophytic v	egetation and
-	ucky Mineral (S1)			Depleted Dark	•	7)				nd hydrology must	
	leyed Matrix (S4)		☐ F	Redox Depress	ions (F8)				unless	disturbed or prob	lematic.
	_ayer (if present):										
Type:											
Depth (in	ches):							Hydric	Soil I	Present? Yes [□ No ⊠
Remarks:											
No hydric s	soil indicators of	bserved	. Coal	deposits pr	esent.						
HYDROLO											
-	drology Indicators								_		
Primary India	cators (minimum of	one requi	red; che	eck all that app	ly)			:	Secon	dary Indicators (2	or more required)
	Water (A1)			☐ Water-Sta			xcept MLR	RA	☐ Wa	ater-Stained Leave	es (B9) (MLRA 1, 2,
	ter Table (A2)			1, 2, 4	A, and 4B)				4A, and 4B)	
▼ Saturation	n (A3)			☐ Salt Crust	(B11)			Į	☐ Dra	ainage Patterns (E	310)
☐ Water M	arks (B1)			☐ Aquatic In	vertebrate	s (B13)			☐ Dry	y-Season Water T	able (C2)
☐ Sedimen	t Deposits (B2)			☐ Hydrogen	Sulfide Oc	dor (C1)			☐ Sa	turation Visible on	Aerial Imagery (C9)
☐ Drift Dep	osits (B3)			☐ Oxidized F	Rhizospher	es along	Living Roo	ts (C3)	☐ Ge	omorphic Position	n (D2)
☐ Algal Ma	t or Crust (B4)			☐ Presence	of Reduce	d Iron (C4	4)		☐ Sh	allow Aquitard (D3	3)
☐ Iron Dep	osits (B5)			☐ Recent Iro	n Reduction	on in Tille	d Soils (C6	i) l	☐ FA	C-Neutral Test (D	5)
☐ Surface	Soil Cracks (B6)			☐ Stunted or	Stressed	Plants (D	1) (LRR A)) [☐ Ra	ised Ant Mounds	(D6) (LRR A)
	on Visible on Aerial			☐ Other (Exp	olain in Re	marks)		I	☐ Fro	ost-Heave Hummo	ocks (D7)
☐ Sparsely	Vegetated Concav	e Surface	e (B8)								
Field Obser	vations:										
Surface Wat	er Present?	Yes 🗌	No 🗵	Depth (inches	s):						
Water Table	Present?	Yes 🗵	No 🗌	Depth (inches	s): 10						
Saturation P	resent?	Yes 🗵	No 🗌	Depth (inches	s): 9		Wetl	and Hydi	rology	Present? Yes	⊠ No □
(includes car	oillary fringe)										
Describe Re	corded Data (strear	n gauge,	monitor	ing well, aerial	photos, pr	evious ins	spections),	if availab	le:		
Remarks:											
Hydrologic	criteria met thre	ough pr	imary	indicators A	2 and A	3.					

Project/Site: 1042.0005 Ravensdale	(City/Count	_{y:} Ravens	sdale/King	Sampling Date: 12/7/17	
Applicant/Owner: Ravensdale LLC				State: WA	Sampling Point: DP-17	
				ownship, Range: <u>01, 22N</u>		
Landform (hillslope, terrace, etc.): Hillslope		Local relie	ef (concave,	, convex, none): None	Slope (%): <u>7</u>	
Subregion (LRR): A2						
Soil Map Unit Name: Beausite gravelly sandy loam				NWI classificat	tion: N/A	
Are climatic / hydrologic conditions on the site typical for this						
Are Vegetation <u>v</u> , Soil <u>v</u> , or Hydrology sign	nificantly dist	turbed?	Are "No	ormal Circumstances" pres	ent? Yes 🗌 No 🗵	
Are Vegetation, Soil, or Hydrology natu	rally problen	natic?	(If need	ed, explain any answers in	Remarks.)	
SUMMARY OF FINDINGS - Attach site map	showing	samplin	g point l	ocations, transects,	important features, etc.	
Hydrophytic Vegetation Present? Yes ☐ No 🗵						
Hydric Soil Present? Yes ☐ No 🗵			e Sampled			
Wetland Hydrology Present? Yes ☐ No ☒		With	in a Wetlar	nd? Yes ☐ No) <u>X</u>	
Remarks: No wetland criteria observed. Accumul	ated prec	ipitation	128% of	normal for the 2017/2	018 water year. Data plot	
located in Trench G.	•				,	
VEGETATION – Use scientific names of plan	ts.					
T. O. J. (D. J.) 00 (I)			Indicator	Dominance Test works	heet:	
Tree Stratum (Plot size: 30 ft) 1. Alnus rubra	% Cover 10	Yes	FAC	Number of Dominant Spo		
2 Thuja plicata	5	Yes	FAC	That Are OBL, FACW, or	r FAC: <u>4</u> (A)	
3. Pseudotsuga menziesii	5	Yes	FACU	Total Number of Domina		
4.	<u> </u>		17100	Species Across All Strata	a: <u>8</u> (B)	
	20	= Total C	over	Percent of Dominant Spe That Are OBL, FACW, or		
Sapling/Shrub Stratum (Plot size: 15 ft)	15	Voc	ΕΛC			
1. Rubus armeniacus		Yes	<u>FAC</u>	Prevalence Index work Total % Cover of:		
2					x 1 = <u>0</u>	
3					x = 0	
4 5					x 3 = 135	
0	15	= Total C	over		x 4 = 80	
Herb Stratum (Plot size: 5 ft)					x 5 = 0	
1. Ranunculus repens	15	Yes		Column Totals: 65	(A) 215 (B)	
2. Polystichum munitum		<u>Yes</u>	FACU		2.24	
3. Geranium robertianum	5	Yes	FACU	Prevalence Index		
4. Rubus ursinus		Yes	FACU	Hydrophytic Vegetation		
5				Rapid Test for Hydro		
6				☐ Dominance Test is > ☐ Prevalence Index is:		
7				_	ations ¹ (Provide supporting	
8					or on a separate sheet)	
9				☐ Wetland Non-Vascul	ar Plants ¹	
10				☐ Problematic Hydroph	nytic Vegetation¹ (Explain)	
11	30	= Total C	over		and wetland hydrology must	
Woody Vine Stratum (Plot size: 30 ft)		Total		be present, unless distur	bed or problematic.	
1				Hydrophytic		
2				Vegetation	□ Na W	
% Bare Ground in Herb Stratum	0	= Total C	over	Present? Yes	□ No ⊠	
Remarks:				l		
No hydrophytic vegetation criteria obse	ervea.					

Depth	Matrix	(Red	ox Featui	es			
(inches)	Color (moist)	%	Colo	or (moist)	%	Type ¹	Loc ²	Texture	
0-4	10YR 2/2	100			_	_	<u>-</u>	GrSiL	Gravelly Silt Loam
4-14	N 2.5/0	40					-	Coal	Coal/ Mixed Matrix
4-14	10YR 2/2	40					<u>-</u>	GrSiL	
4-14	10YR 6/4	18	10`	YR 6/8	2	<u>C</u>	<u>M</u>	SiCIL	Silty Clay Loam/mixed matrix
	-								
			_						
¹Type: C=C	oncentration, D=D	epletion, F	RM=Red	luced Matrix, C	S=Cover	ed or Coa	ted Sand G	rains.	² Location: PL=Pore Lining, M=Matrix.
Hydric Soil	Indicators: (App	licable to	all LRR	s, unless othe	erwise no	oted.)		Inc	licators for Problematic Hydric Soils ³ :
☐ Histosol	(A1)		□ :	Sandy Redox ((S5)				2 cm Muck (A10)
☐ Histic Ep	oipedon (A2)			Stripped Matrix	(S6)				Red Parent Material (TF2)
☐ Black His	stic (A3)			Loamy Mucky	Mineral (F	-1) (exce p	t MLRA 1)		Very Shallow Dark Surface (TF12)
	n Sulfide (A4)			Loamy Gleyed		2)			Other (Explain in Remarks)
	d Below Dark Surfa	ace (A11)		Depleted Matri	x (F3)				
	ark Surface (A12)			Redox Dark Sເ	•	•			dicators of hydrophytic vegetation and
-	lucky Mineral (S1)			Depleted Dark					wetland hydrology must be present,
	Bleyed Matrix (S4)			Redox Depress	sions (F8)			unless disturbed or problematic.
	Layer (if present)	:							
Type:				_					
Depth (in	ches):			-				Hydrid	: Soil Present? Yes ☐ No 区
Remarks:									
No flydlic s	soil indicators o	Juserved	u. FION	II 4-14 IIICHE	55 5011 P	ionie is	compose	u oi iiiix	ed mamces.
HYDROLO	oc v								
	וטי								
Wetland Hy	drology Indicator	rs:							
-	drology Indicator		ıired; ch	eck all that app	oly)				Secondary Indicators (2 or more required)
Primary India	drology Indicator		uired; ch			ves (B9) (except ML		· · · · · ·
Primary India	drology Indicator cators (minimum o Water (A1)		lired; ch	☐ Water-Sta	ained Lea		except MLI		Water-Stained Leaves (B9) (MLRA 1, 2,
Primary India ☐ Surface ☐ High Wa	drology Indicator cators (minimum o Water (A1) ater Table (A2)		iired; ch	☐ Water-Sta	ained Lea I A, and 4		except MLI	RA	☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
Primary India Surface High Wa Saturation	cators (minimum o Water (A1) ater Table (A2) on (A3)		tired; ch	☐ Water-Sta 1, 2, 4 ☐ Salt Crust	ained Lea I A, and 4 t (B11)	В)	except MLI	RA	☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) ☐ Drainage Patterns (B10)
Primary India Surface High Wa Saturatio Water M	drology Indicator cators (minimum o Water (A1) ater Table (A2) on (A3) larks (B1)		iired; ch	☐ Water-Sta 1, 2, 4 ☐ Salt Crust ☐ Aquatic In	ained Lea I A, and 4 t (B11) overtebrat	B) es (B13)	except MLI	RA	 Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) □ Drainage Patterns (B10) □ Dry-Season Water Table (C2)
Primary India Surface High Wa Saturatio Water M Sedimen	cators (minimum of water (A1) Inter Table (A2) Ion (A3) Iarks (B1) Int Deposits (B2)		uired; ch	☐ Water-Sta 1, 2, 4 ☐ Salt Crust ☐ Aquatic In ☐ Hydrogen	ained Lea I A, and 4 t (B11) overtebrat Sulfide (B) es (B13) Odor (C1)		RA	Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C9
Primary India Surface High Wa Saturatio Water M Sedimen Drift Dep	drology Indicator cators (minimum of Water (A1) ater Table (A2) on (A3) larks (B1) on Deposits (B2) posits (B3)		uired; ch	Water-Sta 1, 2, 4 Salt Crust Aquatic Ir Hydrogen Oxidized	ained Lea IA, and 4 t (B11) overtebrat Sulfide (Rhizosph	es (B13) Odor (C1) eres along	Living Roc	RA ots (C3)	Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C9 Geomorphic Position (D2)
Primary India Surface High Wa Saturatio Water M Sedimen Drift Dep Algal Ma	cators (minimum of water (A1) ater Table (A2) on (A3) aterks (B1) at Deposits (B2) cosits (B3) at or Crust (B4)		uired; ch	Water-State 1, 2, 4 Salt Crust Aquatic Ir Hydrogen Oxidized Presence	ained Lea IA, and 4 t (B11) overtebrat Sulfide (Rhizosph of Reduc	es (B13) Odor (C1) eres along ed Iron (C	ı Living Roo 4)	RA ots (C3)	Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C9) Geomorphic Position (D2) Shallow Aquitard (D3)
Primary India Surface High Wa Saturatio Water M Sedimen Drift Dep Algal Ma	drology Indicator cators (minimum of Water (A1) ter Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5)		uired; ch	Water-Star 1, 2, 4 1, 2, 4 Salt Crust Aquatic Ir Hydrogen Oxidized I Presence Recent Iro	ained Lea IA, and 4 t (B11) overtebrat Sulfide (Rhizosph of Reduction on Reduction	es (B13) Odor (C1) eres along eed Iron (C	Living Roc 4) ed Soils (C6	RA obts (C3)	Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C9) Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5)
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Primary India Surface High Wa Saturatio Water M Sedimen Drift Dep Algal Ma Iron Dep Surface	cators (minimum of water (A1) Inter Table (A2) Inter Table (A2) Inter Table (B1) Introduction (B3) Introduction (B2) Introduction (B3) Introduction (B4) Introduction (B4) Introduction (B4) Introduction (B4) Introduction (B5) Introduction (B6) Int	of one requ	(B7)	Water-Star 1, 2, 4 1, 2, 4 Salt Crust Aquatic Ir Hydrogen Oxidized I Presence Recent Iro	ained Lea IA, and 4 t (B11) overtebrat Sulfide (Rhizosph of Reduc on Reduc r Stresse	es (B13) Odor (C1) eres along ed Iron (C tion in Tille d Plants (E	Living Roc 4) ed Soils (C6	RA obts (C3)	Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C9) Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5)
Primary India Surface High Wa Saturatio Water M Sedimen Drift Dep Algal Ma Iron Dep Surface Inundatio Sparsely	cators (minimum of water (A1) Inter Table (A2) Inter Table (A2) Inter Table (B1) Int Deposits (B2) Int Deposits (B3) Int or Crust (B4) Inter Table (B4) Inter Table (B5) Inter Table (B6) Inter T	of one requ	(B7)	Water-Star 1, 2, 4 Salt Crust Aquatic Ir Hydrogen Oxidized Presence Recent Iro Stunted o	ained Lea IA, and 4 t (B11) overtebrat Sulfide (Rhizosph of Reduc on Reduc r Stresse	es (B13) Odor (C1) eres along ed Iron (C tion in Tille d Plants (E	Living Roc 4) ed Soils (C6	RA obts (C3)	Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C9) Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) Raised Ant Mounds (D6) (LRR A)
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Primary India Surface High Wa Saturatio Water M Sedimen Drift Dep Algal Ma Iron Dep Surface Inundatio Sparsely	drology Indicator cators (minimum of Water (A1) Inter Table (A2) Inter Table (A2) Inter Table (B2) Inter Tab	of one requ al Imagery ave Surfac	(B7) e (B8)	Water-Star 1, 2, 4 1, 2, 4 Salt Crust Aquatic Ir Hydrogen Oxidized Presence Recent Irc Stunted o Other (Ex	ained Lea IA, and 4 t (B11) overtebrat Sulfide (Rhizosph of Reduct on Reduct r Stresse plain in R	es (B13) Odor (C1) eres along ed Iron (C tion in Tille d Plants (E emarks)	Living Roc 4) ed Soils (C6	RA obts (C3)	Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C9) Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) Raised Ant Mounds (D6) (LRR A)
Primary India Surface In High Water Mater Table Saturation Pater In Surface Water Mater Table Saturation Pater Mater Mat	drology Indicator cators (minimum of Water (A1) Inter Table (A2) Inter Table (A2) Inter Table (B2) Inter Tab	al Imagery ave Surfac	(B7) e (B8) No ⊠	Water-Star 1, 2, 4 1, 2, 4 Salt Crust Aquatic Ir Hydrogen Oxidized Ir Presence Recent Ir Stunted o Other (Ex	ained Lea IA, and 4 I (B11) Invertebrat Sulfide (IA) Rhizosph of Reduct on Reduct on Reduct r Stresse plain in Reduct es):	es (B13) Odor (C1) eres along ed Iron (C tion in Tille d Plants (E	J Living Roo 4) ed Soils (C6 01) (LRR A	RA ots (C3) 6)	Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C9) Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) Raised Ant Mounds (D6) (LRR A)
Primary India Surface High Wa Saturatio Water M Sedimen Drift Dep Algal Ma Iron Dep Surface Inundatio Sparsely Field Obser Surface Wat Water Table Saturation P (includes cal	drology Indicator cators (minimum of Water (A1) Inter Table (A2) Inter Table (A2) Inter Table (B1) Introduction (B2) Introduction (B3) Introduction (B3) Introduction (B4) Int	al Imagery ave Surfac Yes Yes Yes Yes	(B7) e (B8) No ⊠ No ⊠ No ⊠	Water-Star 1, 2, 4 1, 2, 4 Salt Crust Aquatic Ir Hydrogen Oxidized Ir Presence Recent Ir Stunted o Other (Ex	ained Lea IA, and 4 I (B11) I (B11) I vertebrat Sulfide (Rhizosph of Reduct on Reduct r Stresse plain in R es): es): es):	es (B13) Odor (C1) eres along ed Iron (C tion in Tille d Plants (E emarks)	Living Roc 4) ed Soils (C6 01) (LRR A	RA ots (C3) 6) land Hyd	Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) □ Drainage Patterns (B10) □ Dry-Season Water Table (C2) □ Saturation Visible on Aerial Imagery (C9 □ Geomorphic Position (D2) □ Shallow Aquitard (D3) □ FAC-Neutral Test (D5) □ Raised Ant Mounds (D6) (LRR A) □ Frost-Heave Hummocks (D7)
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Primary India Surface High Wa Saturatio Water M Sedimen Drift Dep Algal Ma Iron Dep Surface Inundatio Sparsely Field Obser Surface Wat Water Table Saturation P (includes ca) Describe Re	drology Indicator cators (minimum of Water (A1) Inter Table (A2) Inter Table (A2) Inter Table (A2) Inter Table (B2) Inter Tab	al Imagery ave Surfac Yes Yes Yes am gauge,	(B7) e (B8) No ☑ No ☑ No ☑ monitor	Water-Sta 1, 2, 4 1, 2, 4 Salt Crust Aquatic Ir Hydrogen Oxidized I Presence Recent Irc Stunted o Other (Ex Depth (inched Depth (inc	ained Lea IA, and 4 I (B11) Invertebrat Sulfide (IA) Rhizosph of Reduct on Reduct r Stresse plain in Reses): es): photos,	es (B13) Ddor (C1) eres along ded Iron (C tion in Tille d Plants (E emarks)	Living Roc 4) ed Soils (C6 01) (LRR A	RA ots (C3) 6) land Hyd	Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) □ Drainage Patterns (B10) □ Dry-Season Water Table (C2) □ Saturation Visible on Aerial Imagery (C9 □ Geomorphic Position (D2) □ Shallow Aquitard (D3) □ FAC-Neutral Test (D5) □ Raised Ant Mounds (D6) (LRR A) □ Frost-Heave Hummocks (D7)
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Primary India Surface High Wa Saturatio Water M Sedimen Drift Dep Algal Ma Iron Dep Surface Inundatio Sparsely Field Obser Surface Wat Water Table Saturation P (includes ca) Describe Re	drology Indicator cators (minimum of Water (A1) Inter Table (A2) Inter Table (A2) Inter Table (A2) Inter Table (B2) Inter Tab	al Imagery ave Surfac Yes Yes Yes am gauge,	(B7) e (B8) No ☑ No ☑ No ☑ monitor	Water-Sta 1, 2, 4 1, 2, 4 Salt Crust Aquatic Ir Hydrogen Oxidized I Presence Recent Irc Stunted o Other (Ex Depth (inched Depth (inc	ained Lea IA, and 4 I (B11) Invertebrat Sulfide (IA) Rhizosph of Reduct on Reduct r Stresse plain in Reses): es): photos,	es (B13) Ddor (C1) eres along ded Iron (C tion in Tille d Plants (E emarks)	Living Roc 4) ed Soils (C6 01) (LRR A	RA ots (C3) 6) land Hyd	Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) □ Drainage Patterns (B10) □ Dry-Season Water Table (C2) □ Saturation Visible on Aerial Imagery (C9 □ Geomorphic Position (D2) □ Shallow Aquitard (D3) □ FAC-Neutral Test (D5) □ Raised Ant Mounds (D6) (LRR A) □ Frost-Heave Hummocks (D7)

Project/Site: 1042.0005 Ravensdale	(City/Count	_{y:} Ravens	sdale/King	Sampling Date: 12/7/17	
Applicant/Owner: Ravensdale LLC				State: WA	Sampling Point: DP-18	
				ownship, Range: 01, 22N		
					e Slope (%): <u>5</u>	
Subregion (LRR): A2	_ Lat: 47.3	3481578	34	Long: -121.9801339	0 Datum: WGS 84	
Soil Map Unit Name: Beausite gravelly sandy loam				NWI classificat		
Are climatic / hydrologic conditions on the site typical for this						
Are Vegetation <u>v</u> , Soil <u>v</u> , or Hydrology sign	ificantly dist	urbed?	Are "No	ormal Circumstances" pres	ent? Yes ☐ No 🗷	
Are Vegetation, Soil, or Hydrology natu	rally problen	natic?	(If neede	ed, explain any answers in	Remarks.)	
SUMMARY OF FINDINGS - Attach site map	showing	samplin	g point lo	ocations, transects,	important features, etc.	
Hydrophytic Vegetation Present? Yes ☒ No ☐						
Hydric Soil Present? Yes ☐ No 🗵			ne Sampled			
Wetland Hydrology Present? Yes ☐ No 🗵		with	nin a Wetlan	nd? Yes ☐ No) X	
Remarks: Not all three wetland criteria observed.	Accumul	atad pro	cipitation	120% of parmal for th	2017/2019 water year	
(Sea-Tac International Airport). Data pl	ot located	d in Tren	ch G.	120 % Of Hoffmai for ti	ie 2017/2016 water year	
VEGETATION – Use scientific names of plant	s.					
			Indicator	Dominance Test works	heet:	
Tree Stratum (Plot size: 30 ft)	% Cover			Number of Dominant Spo		
1. Populus balsamifera	35	Yes	FAC FAC	That Are OBL, FACW, or	r FAC: <u>4</u> (A)	
2. Alnus rubra	10	No		Total Number of Domina	_	
3. Pseudotsuga menziesii	<u>5</u> 5	No	FACU	Species Across All Strata	a: <u>6</u> (B)	
4. Acer macrophyllum		No	FACU	Percent of Dominant Spe	ecies	
Sapling/Shrub Stratum (Plot size: 15 ft)	55	= Total C	Cover	That Are OBL, FACW, or		
1. Acer circinatum	10	Yes	FAC	Prevalence Index work	sheet:	
2. Rubus armeniacus	5	Yes	FAC	Total % Cover of:		
3. Thuja plicata	E	Yes	FAC		x 1 = 0	
4					x 2 = 0	
5.				· ·	x 3 = 0	
	20	= Total C	Cover		x 4 = 0	
Herb Stratum (Plot size: 5 ft)					x 5 = 0	
1. Ranunculus repens	35	Yes			(A) <u>0</u> (B)	
2. Carex leptopoda	15	Yes	FAC		_	
3. Equisetum arvense	5	<u>No</u>	FAC	Prevalence Index		
4				Hydrophytic Vegetation		
5				Rapid Test for Hydro		
6				☐ Dominance Test is >		
7				☐ Prevalence Index is :		
8					ations ¹ (Provide supporting or on a separate sheet)	
9				☐ Wetland Non-Vascul	• ,	
10					nytic Vegetation¹ (Explain)	
11					and wetland hydrology must	
Woody Vine Stratum (Plot size: 30 ft)	55	= Total C	Cover	be present, unless distur		
1				Hydrophytic		
2				Vegetation		
% Bare Ground in Herb Stratum	0	= Total C	Cover	Present? Yes	⊠ No □	
Domarke:			to do t			
Hydrophytic vegetation criteria technica	ally obser	ved due	to domina	ance of facultative, no	on-diagnostic species.	

	licators.)
Depth Matrix Redox Features	
(inches) Color (moist) % Color (moist) % Type¹ Loc² Texture	Remarks Programme Remarks
Bric	ck
¹ Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ² Location:	PL=Pore Lining, M=Matrix.
	Problematic Hydric Soils ³ :
☐ Histosol (A1) ☐ Sandy Redox (S5) ☐ 2 cm Muck	-
	t Material (TF2)
	ow Dark Surface (TF12)
	olain in Remarks)
Depleted Below Dark Surface (A11) Depleted Matrix (F3)	,
	nydrophytic vegetation and
	drology must be present,
	urbed or problematic.
Restrictive Layer (if present):	
Type:	
Depth (inches): Hydric Soil Prese	ent? Yes □ No ⊠
Remarks:	
No hydric soil indicators observed. Soil plot taken within brick fill road.	
HYDROLOGY	
Wetland Hydrology Indicators:	Indicators (2 or more required)
Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) Secondary Indicators (minimum of one required; check all that apply)	Indicators (2 or more required)
Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) Secondary □ Surface Water (A1) Water-Stained Leaves (B9) (except MLRA Water-Stained Leaves (B9)	stained Leaves (B9) (MLRA 1, 2,
Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) Secondary Indicators (minimum of one required; check all that apply) □ Surface Water (A1) Water-Stained Leaves (B9) (except MLRA □ High Water Table (A2) 1, 2, 4A, and 4B)	tained Leaves (B9) (MLRA 1, 2, and 4B)
Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) Secondary Indicators (minimum of one required; check all that apply) □ Surface Water (A1) Water-Stained Leaves (B9) (except MLRA □ High Water Table (A2) 1, 2, 4A, and 4B) □ Saturation (A3) Salt Crust (B11)	tained Leaves (B9) (MLRA 1, 2, and 4B) e Patterns (B10)
Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) Secondary Indicators (minimum of one required; check all that apply) □ Surface Water (A1) Water-Stained Leaves (B9) (except MLRA □ High Water Table (A2) 1, 2, 4A, and 4B) □ Saturation (A3) □ Salt Crust (B11) □ Water Marks (B1) □ Aquatic Invertebrates (B13)	itained Leaves (B9) (MLRA 1, 2, and 4B) e Patterns (B10) ason Water Table (C2)
Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) Secondary □ Surface Water (A1) Water-Stained Leaves (B9) (except MLRA Water-S □ High Water Table (A2) 1, 2, 4A, and 4B) 4A, and 4B, and	stained Leaves (B9) (MLRA 1, 2, and 4B) e Patterns (B10) son Water Table (C2) on Visible on Aerial Imagery (C9)
Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) Secondary Indicators (minimum of one required; check all that apply) □ Surface Water (A1) Water-Stained Leaves (B9) (except MLRA Water-Stained Leaves (B9) (except MLRA □ High Water Table (A2) 1, 2, 4A, and 4B) 4A, 30 □ Saturation (A3) □ Salt Crust (B11) □ Drainage □ Water Marks (B1) □ Aquatic Invertebrates (B13) □ Dry-Sea □ Sediment Deposits (B2) □ Hydrogen Sulfide Odor (C1) □ Saturation (C3) □ Drift Deposits (B3) □ Oxidized Rhizospheres along Living Roots (C3) □ Geomore	tained Leaves (B9) (MLRA 1, 2, and 4B) e Patterns (B10) ason Water Table (C2) on Visible on Aerial Imagery (C9) ephic Position (D2)
Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) Secondary Indicators (minimum of one required; check all that apply) □ Surface Water (A1) Water-Stained Leaves (B9) (except MLRA Water-Stained Leaves (B9) (except MLRA □ High Water Table (A2) 1, 2, 4A, and 4B) 4A, 3 □ Saturation (A3) □ Salt Crust (B11) □ Drainage □ Water Marks (B1) □ Aquatic Invertebrates (B13) □ Dry-Sea □ Sediment Deposits (B2) □ Hydrogen Sulfide Odor (C1) □ Saturation (C3) □ Drift Deposits (B3) □ Oxidized Rhizospheres along Living Roots (C3) □ Geomore (C4) □ Algal Mat or Crust (B4) □ Presence of Reduced Iron (C4) □ Shallow	trained Leaves (B9) (MLRA 1, 2, and 4B) e Patterns (B10) eson Water Table (C2) on Visible on Aerial Imagery (C9) ephic Position (D2) Aquitard (D3)
Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) Secondary Indicators (minimum of one required; check all that apply) □ Surface Water (A1) Water-Stained Leaves (B9) (except MLRA Water-Stained Leaves (B9) (except MLRA □ High Water Table (A2) 1, 2, 4A, and 4B) 4A, 3 □ Saturation (A3) □ Salt Crust (B11) □ Drainage □ Water Marks (B1) □ Aquatic Invertebrates (B13) □ Dry-Sea □ Sediment Deposits (B2) □ Hydrogen Sulfide Odor (C1) □ Saturation □ Drift Deposits (B3) □ Oxidized Rhizospheres along Living Roots (C3) □ Geomore □ Algal Mat or Crust (B4) □ Presence of Reduced Iron (C4) □ Shallow □ Iron Deposits (B5) □ Recent Iron Reduction in Tilled Soils (C6) □ FAC-Ne	trained Leaves (B9) (MLRA 1, 2, and 4B) e Patterns (B10) eson Water Table (C2) on Visible on Aerial Imagery (C9) phic Position (D2) Aquitard (D3) utral Test (D5)
Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) Secondary Indicators (minimum of one required; check all that apply) □ Surface Water (A1) Water-Stained Leaves (B9) (except MLRA □ High Water Table (A2) 1, 2, 4A, and 4B) □ Saturation (A3) □ Salt Crust (B11) □ Water Marks (B1) □ Aquatic Invertebrates (B13) □ Dry-Sea □ Sediment Deposits (B2) □ Hydrogen Sulfide Odor (C1) □ Saturation □ Drift Deposits (B3) □ Oxidized Rhizospheres along Living Roots (C3) □ Geomor □ Algal Mat or Crust (B4) □ Presence of Reduced Iron (C4) □ Shallow □ Iron Deposits (B5) □ Recent Iron Reduction in Tilled Soils (C6) □ FAC-Ne □ Surface Soil Cracks (B6) □ Stunted or Stressed Plants (D1) (LRR A) □ Raised Answers	trained Leaves (B9) (MLRA 1, 2, and 4B) e Patterns (B10) eson Water Table (C2) on Visible on Aerial Imagery (C9) ephic Position (D2) Aquitard (D3) eutral Test (D5) Ant Mounds (D6) (LRR A)
Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) Secondary □ Surface Water (A1) Water-Stained Leaves (B9) (except MLRA Water-Stained Leaves (B9) (except MLRA □ High Water Table (A2) 1, 2, 4A, and 4B) 4A, and 4B) □ Saturation (A3) □ Salt Crust (B11) □ Drainage □ Water Marks (B1) □ Aquatic Invertebrates (B13) □ Dry-Sea □ Sediment Deposits (B2) □ Hydrogen Sulfide Odor (C1) □ Saturation (C1) □ Drift Deposits (B3) □ Oxidized Rhizospheres along Living Roots (C3) □ Geomore (C4) □ Algal Mat or Crust (B4) □ Presence of Reduced Iron (C4) □ Shallow □ Iron Deposits (B5) □ Recent Iron Reduction in Tilled Soils (C6) □ FAC-Ne □ Surface Soil Cracks (B6) □ Stunted or Stressed Plants (D1) (LRR A) □ Raised A □ Inundation Visible on Aerial Imagery (B7) □ Other (Explain in Remarks) □ Frost-He	trained Leaves (B9) (MLRA 1, 2, and 4B) e Patterns (B10) eson Water Table (C2) on Visible on Aerial Imagery (C9) phic Position (D2) Aquitard (D3) utral Test (D5)
Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) Secondary Indicators (minimum of one required; check all that apply) □ Surface Water (A1) Water-Stained Leaves (B9) (except MLRA □ High Water Table (A2) 1, 2, 4A, and 4B) □ Saturation (A3) □ Salt Crust (B11) □ Water Marks (B1) □ Aquatic Invertebrates (B13) □ Dry-Sea □ Sediment Deposits (B2) □ Hydrogen Sulfide Odor (C1) □ Saturation □ Drift Deposits (B3) □ Oxidized Rhizospheres along Living Roots (C3) □ Geomor □ Algal Mat or Crust (B4) □ Presence of Reduced Iron (C4) □ Shallow □ Iron Deposits (B5) □ Recent Iron Reduction in Tilled Soils (C6) □ FAC-Ne □ Surface Soil Cracks (B6) □ Stunted or Stressed Plants (D1) (LRR A) □ Raised Answers	trained Leaves (B9) (MLRA 1, 2, and 4B) e Patterns (B10) eson Water Table (C2) on Visible on Aerial Imagery (C9) ephic Position (D2) Aquitard (D3) eutral Test (D5) Ant Mounds (D6) (LRR A)
Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) Secondary □ Surface Water (A1) Water-Stained Leaves (B9) (except MLRA Water-Stained Leaves (B9) (except MLRA □ High Water Table (A2) 1, 2, 4A, and 4B) 4A, 3 □ Saturation (A3) □ Salt Crust (B11) □ Drainage □ Water Marks (B1) □ Aquatic Invertebrates (B13) □ Dry-Sea □ Sediment Deposits (B2) □ Hydrogen Sulfide Odor (C1) □ Saturation □ Drift Deposits (B3) □ Oxidized Rhizospheres along Living Roots (C3) □ Geomore Geomore □ Algal Mat or Crust (B4) □ Presence of Reduced Iron (C4) □ Shallow □ Iron Deposits (B5) □ Recent Iron Reduction in Tilled Soils (C6) □ FAC-Ne □ Surface Soil Cracks (B6) □ Stunted or Stressed Plants (D1) (LRR A) □ Raised A □ Inundation Visible on Aerial Imagery (B7) □ Other (Explain in Remarks) □ Frost-He □ Sparsely Vegetated Concave Surface (B8) Field Observations:	trained Leaves (B9) (MLRA 1, 2, and 4B) e Patterns (B10) eson Water Table (C2) on Visible on Aerial Imagery (C9) ephic Position (D2) Aquitard (D3) eutral Test (D5) Ant Mounds (D6) (LRR A)
Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) Secondary □ Surface Water (A1) Water-Stained Leaves (B9) (except MLRA Water-Stained Leaves (B9) (except MLRA □ High Water Table (A2) 1, 2, 4A, and 4B) 4A, 3 □ Saturation (A3) □ Salt Crust (B11) □ Drainage □ Water Marks (B1) □ Aquatic Invertebrates (B13) □ Dry-Sea □ Sediment Deposits (B2) □ Hydrogen Sulfide Odor (C1) □ Saturation □ Drift Deposits (B3) □ Oxidized Rhizospheres along Living Roots (C3) □ Geomore Geomore □ Algal Mat or Crust (B4) □ Presence of Reduced Iron (C4) □ Shallow □ Iron Deposits (B5) □ Recent Iron Reduction in Tilled Soils (C6) □ FAC-Ne □ Surface Soil Cracks (B6) □ Stunted or Stressed Plants (D1) (LRR A) □ Raised A □ Inundation Visible on Aerial Imagery (B7) □ Other (Explain in Remarks) □ Frost-He □ Sparsely Vegetated Concave Surface (B8)	trained Leaves (B9) (MLRA 1, 2, and 4B) e Patterns (B10) eson Water Table (C2) on Visible on Aerial Imagery (C9) ephic Position (D2) Aquitard (D3) eutral Test (D5) Ant Mounds (D6) (LRR A)
Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) Secondary □ Surface Water (A1) Water-Stained Leaves (B9) (except MLRA Water-Stained Leaves (B9) (except MLRA □ High Water Table (A2) 1, 2, 4A, and 4B) 4A, 3 □ Saturation (A3) □ Salt Crust (B11) □ Drainage □ Water Marks (B1) □ Aquatic Invertebrates (B13) □ Dry-Sea □ Sediment Deposits (B2) □ Hydrogen Sulfide Odor (C1) □ Saturation □ Drift Deposits (B3) □ Oxidized Rhizospheres along Living Roots (C3) □ Geomore Geomore □ Algal Mat or Crust (B4) □ Presence of Reduced Iron (C4) □ Shallow □ Iron Deposits (B5) □ Recent Iron Reduction in Tilled Soils (C6) □ FAC-Ne □ Surface Soil Cracks (B6) □ Stunted or Stressed Plants (D1) (LRR A) □ Raised A □ Inundation Visible on Aerial Imagery (B7) □ Other (Explain in Remarks) □ Frost-He □ Sparsely Vegetated Concave Surface (B8) Field Observations:	trained Leaves (B9) (MLRA 1, 2, and 4B) e Patterns (B10) eson Water Table (C2) on Visible on Aerial Imagery (C9) ephic Position (D2) Aquitard (D3) eutral Test (D5) Ant Mounds (D6) (LRR A)
Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) Secondary Indicators (minimum of one required; check all that apply) Secondary Indicators (minimum of one required; check all that apply) Secondary Indicators (minimum of one required; check all that apply) Secondary Indicators (minimum of one required; check all that apply) Secondary Indicators (minimum of one required; check all that apply) Secondary Indicators (minimum of one required; check all that apply) Water Secondary Indicators (minimum of one required; check all that apply (markers) Water Table Present (A1) Water Table Present (A2) Water Table (A2) Water (A3) Water (A3) Water (A3) Water (B1) Water (B1) <td< td=""><td>trained Leaves (B9) (MLRA 1, 2, and 4B) e Patterns (B10) eson Water Table (C2) on Visible on Aerial Imagery (C9) ephic Position (D2) Aquitard (D3) eutral Test (D5) Ant Mounds (D6) (LRR A) eave Hummocks (D7)</td></td<>	trained Leaves (B9) (MLRA 1, 2, and 4B) e Patterns (B10) eson Water Table (C2) on Visible on Aerial Imagery (C9) ephic Position (D2) Aquitard (D3) eutral Test (D5) Ant Mounds (D6) (LRR A) eave Hummocks (D7)
Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) Secondary Indicators (minimum of one required; check all that apply) Secondary Indicators (Managery Indicators (Manager	trained Leaves (B9) (MLRA 1, 2, and 4B) e Patterns (B10) eson Water Table (C2) on Visible on Aerial Imagery (C9) ephic Position (D2) Aquitard (D3) eutral Test (D5) Ant Mounds (D6) (LRR A) eave Hummocks (D7)
Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) Secondary Indicators (minimum of one required; check all that apply) Secondary Indicators (B9) (except MLRA Water-Stained Leaves (B11) Water-Stained Leaves (B9) (except MLRA 4A, 3 4A	trained Leaves (B9) (MLRA 1, 2, and 4B) e Patterns (B10) eson Water Table (C2) on Visible on Aerial Imagery (C9) ephic Position (D2) Aquitard (D3) eutral Test (D5) Ant Mounds (D6) (LRR A) eave Hummocks (D7)
Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) Secondary Indicators (minimum of one required; check all that apply) Secondary Indicators (minimum of one required; check all that apply) Secondary Indicators (minimum of one required; check all that apply) Secondary Indicators (minimum of one required; check all that apply) Water Secondary Indicators (Managery (B7)) Water Marks (B1) Water Secondary Indicators (Managery (B1)) Water Marks (B2) Yes No Depth (inches): Yes No Depth (inches): Yes No Depth (inches): Wetland Hydrology Pressured (B2) Wetland Hydrology Pressured (B3) Wetland Hydrology Pressured (B4) Yes Secondary Indicators (B4) Ye	trained Leaves (B9) (MLRA 1, 2, and 4B) e Patterns (B10) eson Water Table (C2) on Visible on Aerial Imagery (C9) ephic Position (D2) Aquitard (D3) eutral Test (D5) Ant Mounds (D6) (LRR A) eave Hummocks (D7)
Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) Secondary Indicators (minimum of one required; check all that apply) Secondary Indicators (minimum of one required; check all that apply) Secondary Indicators (minimum of one required; check all that apply) Secondary Indicators (minimum of one required; check all that apply) Water Secondary Indicators (Managery (B7)) Water Marks (B1) Water Secondary Indicators (Managery (B1)) Water Marks (B2) Yes No Depth (inches): Yes No Depth (inches): Yes No Depth (inches): Wetland Hydrology Pressured (B2) Wetland Hydrology Pressured (B3) Wetland Hydrology Pressured (B4) Yes Secondary Indicators (B4) Ye	trained Leaves (B9) (MLRA 1, 2, and 4B) e Patterns (B10) eson Water Table (C2) on Visible on Aerial Imagery (C9) ephic Position (D2) Aquitard (D3) eutral Test (D5) Ant Mounds (D6) (LRR A) eave Hummocks (D7)
Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) Secondary I Surface Water (A1) Water-Stained Leaves (B9) (except MLRA Water-S High Water Table (A2) 1, 2, 4A, and 4B) 4A, 3 Saturation (A3) Salt Crust (B11) Drainag Water Marks (B1) Aquatic Invertebrates (B13) Dry-Sea Sediment Deposits (B2) Hydrogen Sulfide Odor (C1) Saturation Drift Deposits (B3) Oxidized Rhizospheres along Living Roots (C3) Geomor Algal Mat or Crust (B4) Presence of Reduced Iron (C4) Shallow Iron Deposits (B5) Recent Iron Reduction in Tilled Soils (C6) FAC-Ne Surface Soil Cracks (B6) Stunted or Stressed Plants (D1) (LRR A) Raised A Inundation Visible on Aerial Imagery (B7) Other (Explain in Remarks) Frost-He Sparsely Vegetated Concave Surface (B8) Field Observations: Surface Water Present? Yes No Depth (inches): Wetland Hydrology Present (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	itained Leaves (B9) (MLRA 1, 2, and 4B) e Patterns (B10) eson Water Table (C2) on Visible on Aerial Imagery (C9) ephic Position (D2) Aquitard (D3) eutral Test (D5) Ant Mounds (D6) (LRR A) eave Hummocks (D7) sent? Yes \(\bar{\text{No}} \) No \(\bar{\text{X}} \)
Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) Secondary I Surface Water (A1) Water-Stained Leaves (B9) (except MLRA Water-Stained Leaves (B1) 4A, 34, 34, 34, 34, 34, 34, 34, 34, 34, 34	itained Leaves (B9) (MLRA 1, 2, and 4B) e Patterns (B10) eson Water Table (C2) on Visible on Aerial Imagery (C9) ephic Position (D2) Aquitard (D3) eutral Test (D5) Ant Mounds (D6) (LRR A) eave Hummocks (D7) sent? Yes \Boxed No \Boxed vas perched atop

Project/Site: 1042.0005 Ravensdale		City/Count	_{y:} Ravens	sdale/King	Sampling Date: 12/7/17
Applicant/Owner: Ravensdale LLC				State: WA	Sampling Point: DP-19
Investigator(s): Emily Swaim/Richard Peel			Section, To	ownship, Range: <u>01, 22</u> N	N, 06E & 07E
					<u>e</u> Slope (%): 3
Subregion (LRR): A2					Datum: WGS 84
Soil Map Unit Name: Beausite gravelly sandy loam				NWI classifica	tion: N/A
Are climatic / hydrologic conditions on the site typical for this					
Are Vegetation, Soil, or Hydrology sign	nificantly dis	turbed?	Are "No	ormal Circumstances" pres	ent? Yes ☒ No ☐
Are Vegetation, Soil, or Hydrology natu	ırally probler	matic?	(If need	ed, explain any answers in	Remarks.)
SUMMARY OF FINDINGS - Attach site map	showing	samplin	g point l	ocations, transects,	important features, etc.
Hydrophytic Vegetation Present? Yes ☒ No ☐					
Hydric Soil Present? Yes ⊠ No □			ne Sampled		
Wetland Hydrology Present? Yes ☒ No ☐		with	nin a Wetlar	nd? Yes ເເ No	0 📙
Remarks: All three wetland criteria observed. Acc	cumulated	d precipit	ation 128	% of normal for 2017	/2018 water vear
(Sea-Tac International Airport). Data p	lot collect	ed in We	etland H.		•
VEGETATION – Use scientific names of plan	ts.				
		Dominant		Dominance Test works	sheet:
Tree Stratum (Plot size: 30 ft) 1	% Cover		Status	Number of Dominant Sp That Are OBL, FACW, o	
2				Total Number of Domina	ant
3		· 		Species Across All Strat	a: <u>3</u> (B)
4	0			Percent of Dominant Sp	
Sapling/Shrub Stratum (Plot size: 15 ft)	<u> </u>	= Total C	ovei	That Are OBL, FACW, o	or FAC: <u>100%</u> (A/B)
1. Rubus armeniacus	40	Yes	FAC	Prevalence Index work	sheet:
2. Salix lucida spp. lasiandra	15	No	FACW		Multiply by:
3					x 1 = 0
4					x 2 = <u>0</u>
5					x 3 = 0
Herb Stratum (Plot size: 5 ft)	55	= Total C	Cover		x 4 = <u>0</u>
1. Scirpus cyperinus	25	Yes	OBL		x = 0 (A) 0 (B)
2. Ranunculus repens	15	Yes	FAC	Column Totals: 0	(A) <u>U</u> (B)
3. Equisetum telmateia	5	No	FACW	Prevalence Index	= B/A = 0
4. Veronica americanum	5	No	OBL	Hydrophytic Vegetation	n Indicators:
5				■ Rapid Test for Hydro	phytic Vegetation
6				■ Dominance Test is >	
7				☐ Prevalence Index is	
8					tations¹ (Provide supporting or on a separate sheet)
9				☐ Wetland Non-Vascul	• • • • • • • • • • • • • • • • • • • •
10				☐ Problematic Hydroph	hytic Vegetation¹ (Explain)
11	50			¹ Indicators of hydric soil	and wetland hydrology must
Woody Vine Stratum (Plot size: 30 ft)	<u> </u>	= Total C	over	be present, unless distu	rbed or problematic.
1				Hydrophytic	
2	0			Vegetation	
% Bare Ground in Herb Stratum	0	= Total C		Present? Yes	s⊠ No □
Pomorko:				oot	
Hydrophytic vegetation criteria observe	ea miougi	n me aor	ппапсе т	C31.	

Depth	Matrix		,		x Feature		0. 00	o ubo	ence of indicators.)
(inches)	Color (moist)	%	Color	(moist)	%	Type ¹	Loc ²	<u>Texture</u>	
0-11	10YR 2/2	100			-	-		SiLo	Silt Loam - with organics
11-16	7.5YR 3/2	95	7.5\	/R 4/4	5	С	M	SiLo	Silt Loam
								-	
		_			-			-	
					-				
					_				
¹Tyne: C=C	oncentration, D=D	enletion RI	M=Redu	iced Matrix CS	S=Covere	d or Coat	ed Sand G	rains	² Location: PL=Pore Lining, M=Matrix.
	Indicators: (App						ca Garia G		icators for Problematic Hydric Soils ³ :
☐ Histosol				andy Redox (S		·			2 cm Muck (A10)
	ipedon (A2)			tripped Matrix					,
☐ Black Hi				oamy Mucky M			t MLRA 1)		Very Shallow Dark Surface (TF12)
	n Sulfide (A4)			oamy Gleyed N	-)			Other (Explain in Remarks)
	Below Dark Surfa	ice (A11)		epleted Matrix	. ,			2.	
	irk Surface (A12) lucky Mineral (S1)			edox Dark Sur epleted Dark S	. ,	:7\			dicators of hydrophytic vegetation and wetland hydrology must be present,
-	ileyed Matrix (S4)			edox Depressi		7)			unless disturbed or problematic.
	Layer (if present)			очох Боргооо	10110 (1 0)			1	unicoo distarbed of problematic.
Type:									
Depth (in	ches):							Hydric	Soil Present? Yes ⊠ No □
Remarks:								11,74	
Hydric soil	indicator A4 ol	oserved.							
HYDROLO	GY								
	drology Indicator	g-							
	cators (minimum o		ed: che	ck all that anni	v)			ç	Secondary Indicators (2 or more required)
·	Water (A1)	r one requi		☐ Water-Stai		es (RQ) (e	vcent MI F		☐ Water-Stained Leaves (B9) (MLRA 1, 2,
	ter Table (A2)				A, and 4B		xcept iiiLi	\A. [4A, and 4B)
➤ Saturation				,, ☐ Salt Crust	•	,		Г	☐ Drainage Patterns (B10)
	arks (B1)			☐ Aquatic Inv	. ,	s (B13)		_	☐ Dry-Season Water Table (C2)
	it Deposits (B2)			Hydrogen : □					☐ Saturation Visible on Aerial Imagery (C9)
	oosits (B3)			Oxidized R			Living Roo		☑ Geomorphic Position (D2)
	t or Crust (B4)			☐ Presence of	•	_	•	, ,	☐ Shallow Aquitard (D3)
☐ Iron Dep	osits (B5)			☐ Recent Iro	n Reducti	on in Tille	d Soils (C6	j) [☐ FAC-Neutral Test (D5)
☐ Surface	Soil Cracks (B6)			■ Stunted or	Stressed	Plants (D	1) (LRR A)) [Raised Ant Mounds (D6) (LRR A)
☐ Inundation	on Visible on Aeria	l Imagery (l	B7)	☐ Other (Exp	lain in Re	marks)			☐ Frost-Heave Hummocks (D7)
☐ Sparsely	Vegetated Conca	ve Surface	(B8)						
Field Obser	vations:								
Surface Wat	er Present?	Yes 🗌 1	No 🔀	Depth (inches	s):				
Water Table	Present?	Yes 🗵 1	No 🗌	Depth (inches					
Saturation P	resent? pillary fringe)	Yes 🗵 1	No 🗌	Depth (inches	s): Surfa	ce	Wetl	and Hydr	ology Present? Yes ⊠ No □
Describe Re	corded Data (strea	ım gauge, r	monitorir	ng well, aerial _l	photos, p	revious in	spections),	if availabl	e:
Remarks:									
	criteria met th	rough pri	marv i	ndicators A	2 A3 C	1 and	D1 and s	econdar	ry indicator D2.
, ar ologic	Sinona mot til	. Jugir pii	a. y 1		_, ,, C	. , and		20011001	,

Project/Site: 1042.0005 Ravensdale		City/C	County	: Ravens	sdale/King	Sampling Date: 12/7/17	
Applicant/Owner: Ravensdale LLC		-	-			Sampling Point: DP-20	
Investigator(s): Emily Swaim/Richard Peel				Section, To	wnship, Range: <u>01, 22</u>	N, 06E & 07E	
						Slope (%): 5	
Subregion (LRR): A2	Lat: 47.	3488	3148	3	Long: -121.980704	66 Datum: WGS 8	4
Soil Map Unit Name: Beausite gravelly sandy loam					NWI classifica		
Are climatic / hydrologic conditions on the site typical for this					f no, explain in Remarks.)		
Are Vegetation, Soil, or Hydrology sign	nificantly dis	turbe	d?	Are "No	ormal Circumstances" pre	sent? Yes ☒ No ☐	
Are Vegetation, Soil, or Hydrology natu				(If neede	ed, explain any answers i	n Remarks.)	
SUMMARY OF FINDINGS – Attach site map				g point lo	ocations, transects	, important features, et	tc.
Hydrophytic Vegetation Present? Yes ☒ No ☐							
Hydric Soil Present? Yes No 🗵				e Sampled			
Wetland Hydrology Present? Yes ☐ No 🗵			with	in a Wetlan	nd? Yes 🗌 N	lo 🗵	
Remarks: Not all three wetland criteria observed. (Sea-Tac International Airport). Data p	Accumul	ated	l pred uplar	cipitation	128% of normal for 2	2017/2018 water year I.	
, , , ,			арта.		ajacom to Trougha i		
VEGETATION – Use scientific names of plan	Absolute	Dom	inant	Indicator	Dominance Test work	shoot	
Tree Stratum (Plot size: 30 ft) 1	% Cover	Spe	cies?	Status	Number of Dominant S That Are OBL, FACW,	pecies	
2					Total Number of Domin	ant	
3					Species Across All Stra	_	
4	0	= T	otal C	over	Percent of Dominant Sp That Are OBL, FACW,	pecies or FAC: <u>100%</u> (A/B))
Sapling/Shrub Stratum (Plot size: 15 ft) 1. Rubus armeniacus	90	Y	25	FAC	Prevalence Index wor		
2						Multiply by:	
3.					<u>-</u>	x 1 = 0	
4.						x 2 = 0	
5					*	x 3 = 0	
	90	= Te	otal C	over	FACU species	x 4 = <u>0</u>	
Herb Stratum (Plot size: 5 ft)	15	V		FACW	UPL species	x 5 = <u>0</u>	
1. Equisetum telmateia					Column Totals: 0	(A) <u>0</u> (B))
2					Prevalence Index	= B/A = 0	
3					Hydrophytic Vegetation	<u></u>	
5					☐ Rapid Test for Hydr		
6					■ Dominance Test is	>50%	
7.					☐ Prevalence Index is	≤3.0 ¹	
8.						otations ¹ (Provide supporting	
9						s or on a separate sheet)	
10					Wetland Non-Vascu		
11					- , ,	hytic Vegetation¹ (Explain) I and wetland hydrology must	
Woody Vine Stratum (Plot size: 30 ft)	15	= T	otal C	over	be present, unless distu		
1					Hydrophytic		
2	0				Vegetation Present? Ye	s⊠ No□	
% Bare Ground in Herb Stratum 85	<u> </u>	= 10	otal C	over	rieseitt: ie	S MO L	
Remarks: Hydrophytic vegetation criteria observe	ed through	h the	don	ninance te	est		
Tryanspriyas regulation online observe	, a anougi			arioo t			

Sampling Point: DP-20

Depth (inches)	Matrix	<u> </u>	Color	Red (moist)	ox Featur		Loc ²	Toyture	Domarka
(inches) 0-17	Color (moist) 10YR 2/2	100	<u>Color</u>	(moist)	<u> %</u> -	Type ¹ -		Texture GrSiLo	Remarks Gravelly Silt Loam
17-20	10YR 3/2	98	10Y	R 3/3	2		M	GrSiLo	Gravelly Silt Loam
					_				
									
								-	
	-		_						
								-	
	-		_		_				
	Concentration, D=D I Indicators: (App						ed Sand G		² Location: PL=Pore Lining, M=Matrix. cators for Problematic Hydric Soils ³ :
☐ Histoso		iicabie to		andy Redox (ieu.)			2 cm Muck (A10)
	pipedon (A2)			ripped Matrix					Red Parent Material (TF2)
	listic (A3)			amy Mucky	` '	1) (excep	t MLRA 1)		Very Shallow Dark Surface (TF12)
	en Sulfide (A4)			pamy Gleyed			· <u>-</u> ,		Other (Explain in Remarks)
	ed Below Dark Surfa	ace (A11)		epleted Matri	•	-,			Carlos (Express are terraine)
	ark Surface (A12)	,		edox Dark Su	. ,)		³ Ind	icators of hydrophytic vegetation and
	Mucky Mineral (S1)			epleted Dark	•	•			vetland hydrology must be present,
☐ Sandy (Gleyed Matrix (S4)			edox Depress					inless disturbed or problematic.
	Layer (if present)	:							
Type:	L X								
Depth (II	nches):							Hydric	Soil Present? Yes ☐ No ☒
Remarks:									
IYDROLO									
	ydrology Indicator							_	
	icators (minimum o	of one requ							econdary Indicators (2 or more required)
	Water (A1)			☐ Water-Sta		, , ,	except MLF	RA [Water-Stained Leaves (B9) (MLRA 1, 2,
•	ater Table (A2)		_		A, and 4I	3)		_	4A, and 4B)
☐ Saturati	, ,			☐ Salt Crust				L	Drainage Patterns (B10)
	/larks (B1)		L	☐ Aquatic In					Dry-Season Water Table (C2)
	nt Deposits (B2)		L	☐ Hydrogen					Saturation Visible on Aerial Imagery (C9)
	posits (B3)		[_	Living Roc		• • • • • • • • • • • • • • • • • • • •
_	at or Crust (B4)			Presence		-	-		Shallow Aquitard (D3)
	posits (B5)						d Soils (C6	•	FAC-Neutral Test (D5)
	Soil Cracks (B6)		-			•	1) (LRR A) [Raised Ant Mounds (D6) (LRR A)
	ion Visible on Aeria			☐ Other (Ex	plain in R	emarks)			Frost-Heave Hummocks (D7)
	y Vegetated Conca	ve Surface	e (B8)						
Field Obse	rvations:								
Surface Wa	iter Present?	Yes 🗌	No 🔀	Depth (inche					
Water Table	e Present?	Yes 🗵	No 🗌	Depth (inche					
		Yes 🗵	No 🗌	Depth (inche	es): <u>18</u>		Wetl	and Hydro	ology Present? Yes ☐ No ⊠
Saturation F				ng well aerial	photos, r	revious in	spections),	if available	9:
(includes ca	ecorded Data (strea	am gauge,	monitorin	ig won, donai	' ''		,		
(includes ca Describe Ro		am gauge,	monitorir	ig won, donar					
(includes ca Describe Ro Remarks:	ecorded Data (strea					on to d			
(includes ca Describe Ro Remarks:						erved.			
(includes ca Describe Ro Remarks:	ecorded Data (strea					erved.			

Project/Site: 1042.0005 Ravensdale	(City/Count	y: Ravens	sdale/King	Sampling Date: 12/7/17	
Applicant/Owner: Ravensdale LLC		State: WA	Sampling Point: DP-21			
				ownship, Range: 01, 22N		
					re Slope (%): 3	
Subregion (LRR): A2	_ Lat: 47.3	348610		Long: -121.9747579	2 Datum: WGS 84	
Soil Map Unit Name: Beausite gravelly sandy loam				NWI classificat		
Are climatic / hydrologic conditions on the site typical for this						
Are Vegetation, Soil, or Hydrology sign	ificantly dist	turbed?	Are "No	ormal Circumstances" pres	ent? Yes ☒ No ☐	
Are Vegetation, Soil, or Hydrology natu	rally problen	natic?	(If need	ed, explain any answers in	Remarks.)	
SUMMARY OF FINDINGS - Attach site map	showing	samplin	ng point le	ocations, transects,	important features, etc.	
Hydrophytic Vogetation Present?						
Hydrophytic Vegetation Present? Yes ☒ No ☐ Hydric Soil Present? Yes ☐ No ☒			he Sampled			
Wetland Hydrology Present? Yes ☒ No ☐		with	nin a Wetlar	nd? Yes ☐ No	o 🔀	
	A	-11	-1-16-6-	4000/ - ((1)		
Remarks: Not all three wetland criteria observed. (Sea-Tac International Airport). Data p	lot taken v	ated pre within Tr	ecipitation ench H dr	rainage area.	ne 2017/2018 water year	
VEGETATION – Use scientific names of plant	ts.					
			t Indicator	Dominance Test works	heet:	
Tree Stratum (Plot size: 30 ft)	% Cover 5	Species?	Status FACW	Number of Dominant Sp	ecies	
1. Salix lucida spp. lasiandra 2. Alnus rubra	5		FAC	That Are OBL, FACW, o	r FAC: <u>7</u> (A)	
2. Allius rubia 3. Populus balsamifera	5	Yes		Total Number of Domina	_	
- ·	<u> </u>	Yes	FAC	Species Across All Strata	a: <u>7</u> (B)	
4	15			Percent of Dominant Spe		
Sapling/Shrub Stratum (Plot size: 15 ft)	10	= Total C	Cover	That Are OBL, FACW, or	r FAC: <u>100%</u> (A/B)	
1. Salix lucida spp. lasiandra	40	Yes	FACW	Prevalence Index work	sheet:	
2. Rubus armeniacus	30	Yes	FAC	Total % Cover of:	Multiply by:	
3					x 1 = 0	
4.					x 2 = 0	
5.				1	x 3 = 0	
	70	= Total C	Cover		x 4 = <u>0</u>	
Herb Stratum (Plot size: <u>5 ft</u>)				UPL species	x 5 = <u>0</u>	
1. Juncus effusus	20		FACW	Column Totals: 0	(A) <u>0</u> (B)	
2. Agrostis capillaris	10	Yes	FAC		n/4 0	
3. Geranium robertianum	5	No	FACU	Prevalence Index		
4. Polystichum munitum	5	No No	FACU	Hydrophytic Vegetation		
5. Carex leptopoda	5 2	No No	FAC	☐ Rapid Test for Hydro ☐ Dominance Test is >		
6. Geum macrophyllum		No	FAC	☐ Prevalence Index is:		
7				_	sations ¹ (Provide supporting	
8					or on a separate sheet)	
9				☐ Wetland Non-Vascul	ar Plants ¹	
10				☐ Problematic Hydroph	nytic Vegetation¹ (Explain)	
11	47			¹ Indicators of hydric soil	and wetland hydrology must	
Woody Vine Stratum (Plot size: 30 ft)	-11	= Total C	Jover	be present, unless distur	bed or problematic.	
1				Lydrophysic		
2				Hydrophytic Vegetation		
	0	= Total C	Cover		⊠ No □	
% Bare Ground in Herb Stratum						
Remarks: Hydrophytic vegetation criteria observe	ed through	n the do	minance t	est.		

Depth	cription: (Describ Matrix			Redo	ox Feature				300	
(inches)	Color (moist)	%	Colo	r (moist)	%	Type ¹	Loc ²	Texture		Remarks
0-7	10YR 3/1	100	-		-			GrSal	_0_	Gravelly Sandy Loam
7+	N 2.5/0	100	-		-	-	-	Coal		Coal
						-				
	-							-		
						-				
17			- -	I Matrice O	0 0		- 1010		21 -	
	oncentration, D=D Indicators: (App						ed Sand G			cation: PL=Pore Lining, M=Matrix. ors for Problematic Hydric Soils ³ :
☐ Histosol				Sandy Redox (,				n Muck (A10)
	pipedon (A2)			Stripped Matrix				ī		Parent Material (TF2)
☐ Black His				_oamy Mucky N	. ,	1) (excep	MLRA 1)	_		Shallow Dark Surface (TF12)
☐ Hydroge	n Sulfide (A4)			_oamy Gleyed			,		-	er (Explain in Remarks)
☐ Depleted	Below Dark Surfa	ace (A11)		Depleted Matrix	k (F3)					
	rk Surface (A12)			Redox Dark Su	. ,			³ In		ors of hydrophytic vegetation and
-	lucky Mineral (S1))		Depleted Dark	-	7)				nd hydrology must be present,
	leyed Matrix (S4) Layer (if present)	\ <u>.</u>	i	Redox Depress	sions (F8)			1	unies	s disturbed or problematic.
Type: Ha).								
Depth (in				-				Unadai		Dunanut? Van □ Na ☑
, ,								Hyaric	5 5011	Present? Yes □ No ⊠
Remarks:										
No hydric s	soil indicators v	were obs	erved.	. A layer of h	nard, pa	cked co	al acts a	s a resti	rictiv	e layer at 7 inches.
HYDROLO	GY									
Wetland Hy	drology Indicato	rs:								
Primary Indi	cators (minimum c	of one requi	red; che	eck all that app	ly)				Seco	ndary Indicators (2 or more required)
■ Surface	Water (A1)			☐ Water-Sta	ined Leav	es (B9) (e	xcept MLI	RA	× W	ater-Stained Leaves (B9) (MLRA 1, 2,
	ter Table (A2)				A, and 4B		•			4A, and 4B)
■ Saturation	on (A3)			☐ Salt Crust	(B11)				× D	rainage Patterns (B10)
☐ Water M	arks (B1)			☐ Aquatic In	vertebrate	s (B13)			□ D	ry-Season Water Table (C2)
Sedimer	t Deposits (B2)			☐ Hydrogen	Sulfide O	dor (C1)			□ S	aturation Visible on Aerial Imagery (C9)
☐ Drift Dep	osits (B3)			☐ Oxidized F	Rhizosphe	res along	Living Roo	ots (C3)	⋉ G	eomorphic Position (D2)
☐ Algal Ma	t or Crust (B4)			☐ Presence	of Reduce	ed Iron (C	1)		□ SI	hallow Aquitard (D3)
☐ Iron Dep	osits (B5)			☐ Recent Iro	n Reducti	on in Tille	d Soils (C6	3)	□ F/	AC-Neutral Test (D5)
☐ Surface	Soil Cracks (B6)			☐ Stunted or	Stressed	Plants (D	1) (LRR A	.)	☐ R	aised Ant Mounds (D6) (LRR A)
	on Visible on Aeria			☐ Other (Exp	olain in Re	emarks)			☐ Fi	rost-Heave Hummocks (D7)
☐ Sparsely	Vegetated Conca	ave Surface	e (B8)							
Field Obser	vations:				. 0. 0/	_				
Surface Wat	er Present?	Yes 🛚	No 🗌	Depth (inche						
Water Table	Present?	Yes 🛚	No 🗌	Depth (inche						
Saturation P		Yes 🛚	No 🗌	Depth (inche	_{s):} Surfa	ice	Wet	land Hyd	rolog	y Present? Yes 🗵 No 🗌
(includes ca	oillary fringe) corded Data (strea	am dalide	monitor	ing well perial	nhotos n	revious in	enections)	if availah	Jo.	
Describe ive	corded Data (Sire	am gauge,	monitor	ing well, aerial	priotos, p	i evious iii	spections),	, ii avaiiau	ic.	
Remarks:										
	critoria mat th	rough or	imanı	indicators ^	1 12 0	nd A2 .	and coco	ndon, i	ndiac	store B0 B10 and D2
i iyarologic	, criteria illet ti	nough pr	шату	iiiuicaluis A	. ı, ∧∠, a	nu As, a	ariu seco	niuai y II	iulua	ators B9, B10, and D2.

Project/Site: 1042.0005 - Ravensdale		City/C	County	: Ravens	sdale/King	Sampling Date: 12/15/2017
Applicant/Owner: Ravensdale LLC						Sampling Point: DP-22U
Investigator(s): Richard Peel				Section, To	ownship, Range: <u>01, 22</u> ľ	N, 06E & 07E
						/e Slope (%): 20
Subregion (LRR): A2	_ Lat: 47.	3544	1515	375687	Long: -121.9860606	61433 Datum: WGS84
Soil Map Unit Name: Beausite gravelly sandy loam					NWI classifica	
Are climatic / hydrologic conditions on the site typical for this						
Are Vegetation, Soil, or Hydrology sign	ificantly dis	turbed	d?	Are "No	ormal Circumstances" pres	sent? Yes ☒ No ☐
Are Vegetation, Soil, or Hydrology natu				(If need	ed, explain any answers ir	ı Remarks.)
SUMMARY OF FINDINGS - Attach site map				g point l	ocations, transects,	important features, etc.
Hydrophytic Vegetation Present? Yes ☐ No 🗵						
Hydric Soil Present? Yes ☐ No 🗵				e Sampled		_
Wetland Hydrology Present? Yes ☐ No 🗵			with	in a Wetlar	nd? Yes □ N	o 🛚
Remarks: No wetland criteria observed. Accumul	ated pred	inita	tion '	115% of	normal for the 2017/2	2018 water vear (Sea-Tac
International Airport). Data collected no	orth of Str	eam	Υ.	1 10 70 01	110111141101 4110 20117/2	.oro water your (ood ruo
VEGETATION – Use scientific names of plant	s.					
	Absolute			Indicator	Dominance Test works	sheet:
Tree Stratum (Plot size: 30 ft) 1. Acer macrophyllum	% Cover 80	Spe Ye		Status FACU	Number of Dominant Sp	
				17100	That Are OBL, FACW, o	or FAC: <u>1</u> (A)
3					Total Number of Domina Species Across All Strate	•
4					Species Across All Stra	.а. <u>э</u> (в)
	80	= To	otal C	over	Percent of Dominant Sp That Are OBL, FACW, of	
Sapling/Shrub Stratum (Plot size: 15 ft)	20	٧.	_	E4011		
1. Polystichum munitum	30	Ye		FACU	Prevalence Index worl	
2. Rubus armeniacus	25	Ye	5	FAC	Total % Cover of:	
3						x 1 = 0 x 2 = 0
4						$x3 = \frac{75}{}$
5	55	= To	otal C	over	FACU species 110	
Herb Stratum (Plot size: <u>5 ft</u>)			olai O	0101		x 5 = 0
1					Column Totals: 135	(A) <u>515</u> (B)
2					Prevalence Index	- D/A - 3.81
3					Hydrophytic Vegetation	
4					Rapid Test for Hydro	
5					☐ Dominance Test is >	
6 7					☐ Prevalence Index is	
8.						tations ¹ (Provide supporting
9.						or on a separate sheet)
10					☐ Wetland Non-Vascu	
11					-	hytic Vegetation¹ (Explain)
Woody Vine Stratum (Plot size: 30 ft)	0	= To	otal C	over	be present, unless distu	and wetland hydrology must rbed or problematic.
1		No)			
2.					Hydrophytic Vegetation	
	0	= To	otal C	over	•	s □ No ⊠
% Bare Ground in Herb Stratum 100						
Remarks: Majority FACU species observed.						

Sampling Point: DP-22

Depth	cription: (Describ Matrix	e to the u	ериппе		ox Feature		or comm	iii uie ab	Sence	of indicators.)
(inches)	Color (moist)	%	Colo	r (moist)	%	Type ¹	Loc ²	Textu		Remarks_
0 - 14	10YR 3/2	100	-		-	-		SaLc)	Sandy loam
8 - 14	10YR 3/3	100	-		-	-	-	SaLo)	Sandy loam
	-									
	-									-
					_					
1Typo: C=C	Concentration, D=De	onlotion P	M-Pod	ucod Matrix C	S=Covere	d or Coate	ad Sand G	Proinc	21.00	cation: PL=Pore Lining, M=Matrix.
	Indicators: (Appl						su Sanu C			ors for Problematic Hydric Soils ³ :
☐ Histosol				Sandy Redox (,				n Muck (A10)
	pipedon (A2)			Stripped Matrix				Ē		Parent Material (TF2)
	istic (A3)			_oamy Mucky N	` '	1) (except	MLRA 1)) [/ Shallow Dark Surface (TF12)
☐ Hydroge	en Sulfide (A4)		□ l	_oamy Gleyed	Matrix (F2	<u>!</u>)] Othe	er (Explain in Remarks)
	d Below Dark Surfa	ce (A11)		Depleted Matrix						
	ark Surface (A12)			Redox Dark Su	, ,			3		ors of hydrophytic vegetation and
, –	Mucky Mineral (S1)			Depleted Dark	•	7)				and hydrology must be present,
	Bleyed Matrix (S4)		<u></u>	Redox Depress	ions (F8)			1	unles	ss disturbed or problematic.
Type:	Layer (if present):									
, , <u> </u>	nches):									D
								Hydr	ic Soil	Present? Yes ☐ No ⊠
Remarks:										
	soil indicators o	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	•							
HYDROLO)GY									
Wetland Hy	drology Indicator	s:								
Primary Indi	cators (minimum of	f one requi	red; che	eck all that app	ly)				Secor	ndary Indicators (2 or more required)
Surface				☐ Water-Sta		es (B9) (e	xcept ML	RA		/ater-Stained Leaves (B9) (MLRA 1, 2,
	ater Table (A2)				A, and 4B	. , .				4A, and 4B)
Saturati				☐ Salt Crust		•			□ Di	rainage Patterns (B10)
☐ Water M	larks (B1)			☐ Aquatic In	vertebrate	s (B13)				ry-Season Water Table (C2)
☐ Sedime	nt Deposits (B2)			☐ Hydrogen	Sulfide O	dor (C1)				aturation Visible on Aerial Imagery (C9)
	posits (B3)			☐ Oxidized F			Living Roo	ots (C3)		eomorphic Position (D2)
	at or Crust (B4)			☐ Presence		_	_			hallow Aquitard (D3)
	posits (B5)			☐ Recent Iro	n Reducti	on in Tille	d Soils (Ce	6)		AC-Neutral Test (D5)
☐ Surface	Soil Cracks (B6)			☐ Stunted or	Stressed	Plants (D	1) (LRR A	A)	☐ Ra	aised Ant Mounds (D6) (LRR A)
☐ Inundati	on Visible on Aeria	l Imagery ((B7)	☐ Other (Exp	olain in Re	emarks)			☐ Fr	rost-Heave Hummocks (D7)
☐ Sparsel	y Vegetated Conca	ve Surface	e (B8)							
Field Obse	rvations:									
Surface Wa	ter Present?	Yes	No 🔀	Depth (inches	s):					
Water Table	Present?	Yes 🗌	No 🗵	Depth (inches	s):					
Saturation F	Present? pillary fringe)	Yes 🗌	No 🗵	Depth (inches	s):		Wet	land Hyd	drolog	y Present? Yes ☐ No ⊠
	ecorded Data (strea	m gauge,	monitor	ing well, aerial	photos, p	revious in	spections)	, if availa	ble:	
Remarks:										
No primar	y or secondary	indicato	rs of h	ydrology ob	served.					
,				, - 3, - 2						

Project/Site: 1042.0005 - Ravensdale	(City/County	. Ravens	sdale/King	Sampling Date: 12/15/2017
Applicant/Owner: Ravensdale LLC				State:	Sampling Point: DP-23W
				ownship, Range: <u>01, 22N</u>	
					e Slope (%): 10
Subregion (LRR): A2	_ _{Lat:} <u>47.3</u>	3544515	375754	Long: -121.9860606	61438 Datum: WGS84
Soil Map Unit Name: Beausite gravelly sandy loam				NWI classificat	ion: PSS
Are climatic / hydrologic conditions on the site typical for this	time of yea	ır? Yes 🗌	No ເ (I	f no, explain in Remarks.)	
Are Vegetation, Soil, or Hydrology sign	nificantly dist	turbed?	Are "No	ormal Circumstances" pres	ent? Yes ☐ No 🗵
Are Vegetation, Soil, or Hydrology natu	rally probler	natic?	(If need	ed, explain any answers in	Remarks.)
SUMMARY OF FINDINGS - Attach site map	showing	samplin	g point le	ocations, transects,	important features, etc.
Hydrophytic Vegetation Present? Yes ☒ No ☐					
Hydric Soil Present? Yes ⊠ No □			e Sampled		_
Wetland Hydrology Present? Yes ☒ No ☐		with	in a Wetlar	nd? Yes⊠ No) ∐
Remarks: All three wetland criteria observed. Acc	cumulatec	nrecinit	ation 115	% of normal for the 20	
(Sea-Tac International Airport). Data p	lot collect	ed in We	tland K.	70 of Hoffila for the 20	317/2010 water year
VEGETATION – Use scientific names of plan	ts.				
To a Objetime (District CO. 6)				Dominance Test works	heet:
Tree Stratum (Plot size: 30 ft) 1	% Cover	NI.	Status	Number of Dominant Spe That Are OBL, FACW, or	
2				Total Number of Domina	nt
3				Species Across All Strata	
4				Percent of Dominant Spe	
Sapling/Shrub Stratum (Plot size: 15 ft)	0	= Total C	over	That Are OBL, FACW, or	r FAC: 100% (A/B)
1. Salix lasiandra	25	Yes	FACW	Prevalence Index work	sheet:
2. Rubus armeniacus	40	Yes	FAC	Total % Cover of:	Multiply by:
3					x 1 = <u>0</u>
4					x 2 = <u>50</u>
5					x 3 = <u>330</u>
	65	= Total C	over		x 4 = 0
Herb Stratum (Plot size: <u>5 ft)</u> 1. Ranunculus repens	40	Yes	FΔC	UPL species 0	x 5 = 0
2. Athyrium cyclosorum	30	Yes	FAC	Column Totals: 135	(A) <u>380</u> (B)
3			1710	Prevalence Index	= B/A = 2.81
4				Hydrophytic Vegetation	
5.				☐ Rapid Test for Hydro	
6.				▼ Dominance Test is >	
7				➤ Prevalence Index is:	≤3.0 ¹
8.					ations¹ (Provide supporting
9					or on a separate sheet)
10				☐ Wetland Non-Vascul	ar Plants [.] nytic Vegetation¹ (Explain)
11.					and wetland hydrology must
Woody Vine Stratum (Plot size: 30 ft)	70	= Total C	over	be present, unless distur	
1		No		Hydrophytic	
2				Vegetation	
% Bare Ground in Herb Stratum 30	0	= Total C	over		⊠ No □
Remarks:					
FAC-FACW vegetation observed.					

Sampling Point: DP-23\

D 41.	N.A 4			D1	🗖 4	_					
Depth (inches)	Matrix Color (moist)	%	Colo	r (moist)	ox Feature %	<u>s</u> Type¹	Loc ²	Textur	e	Remarks	
0 - 18	10YR 3/1	100	<u> </u>		-	-	-	SaLo		Sandy gravelly loam	
					-						—
			_								
								-			
			_								
¹ Type: C=C	oncentration, D=De	epletion, F	RM=Red	luced Matrix, C	S=Covered	d or Coate	ed Sand Gr	rains.	² Loc	ation: PL=Pore Lining, M=Matrix.	
	Indicators: (Appl									rs for Problematic Hydric Soils ³ :	
☐ Histosol	(A1)		□ :	Sandy Redox (S5)] 2 cm	Muck (A10)	
☐ Histic Ep	pipedon (A2)			Stripped Matrix] Red	Parent Material (TF2)	
☐ Black Hi				Loamy Mucky N			t MLRA 1)] Very	Shallow Dark Surface (TF12)	
	n Sulfide (A4)			Loamy Gleyed)] Othe	r (Explain in Remarks)	
	d Below Dark Surfa	ce (A11)		Depleted Matrix	. ,			2.			
	ark Surface (A12)			Redox Dark Su	, ,	7)		°II°		rs of hydrophytic vegetation and	
-	Mucky Mineral (S1) Gleyed Matrix (S4)			Depleted Dark Redox Depress	•	7)				nd hydrology must be present, s disturbed or problematic.	
	Layer (if present):	1		redox Depress	510113 (1 0)				unics	s distarbed of problematic.	
Type:											
	ches):							Hydri	ic Sail	Present? Yes ⊠ No □	
Remarks:	,			•				пуш	3011	Fresent: Tes M NO	
	ta dia atao A.A. at										
Hyaric soil	indicator A4 ob	oservea									
HYDROLO	GY										
HYDROLO Wetland Hy	GY drology Indicators	s:									
Wetland Hy			ired; ch	eck all that app	ly)				Secon	dary Indicators (2 or more required)	
Wetland Hy	drology Indicators		ired; ch	eck all that app ☐ Water-Sta		es (B9) (e	xcept MLF	RA		dary Indicators (2 or more required) ater-Stained Leaves (B9) (MLRA 1, 2	
Wetland Hy Primary India Surface	drology Indicators		ired; ch	☐ Water-Sta			xcept MLF	RA			
Wetland Hy Primary India Surface	drology Indicators cators (minimum of Water (A1) ater Table (A2)		ired; ch	☐ Water-Sta	ined Leave A, and 4B		xcept MLF	RA	☐ Wa	ater-Stained Leaves (B9) (MLRA 1,	
Wetland Hy Primary India Surface High Wa Saturatio	drology Indicators cators (minimum of Water (A1) ater Table (A2)		ired; ch	☐ Water-Sta	ined Leave A, and 4B (B11))	xcept MLF	RA	□ Wa	ater-Stained Leaves (B9) (MLRA 1 , 2 4A, and 4B)	
Wetland Hy Primary India Surface High Wa Saturatio Water M	cators (minimum of Water (A1) uter Table (A2) on (A3)		ired; cho	☐ Water-Sta 1, 2, 4 ☐ Salt Crust	ined Leave A, and 4B (B11) vertebrates) s (B13)	xcept MLF	RA	□ Wa	ater-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) ainage Patterns (B10)	2,
Wetland Hy Primary India Surface High Wa Saturatio Water M Sedimer	cators (minimum of Water (A1) hter Table (A2) on (A3) larks (B1)		ired; che	☐ Water-Sta 1, 2, 4 ☐ Salt Crust ☐ Aquatic In ☑ Hydrogen	ined Leave A, and 4B (B11) vertebrates Sulfide Oc	s (B13) dor (C1)	xcept MLF		☐ Wa	ater-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) ainage Patterns (B10) y-Season Water Table (C2)	2,
Wetland Hy Primary India Surface High Wa Saturatio Water M Sedimer Drift Dep	drology Indicators cators (minimum of Water (A1) ater Table (A2) on (A3) larks (B1) at Deposits (B2)		ired; che	☐ Water-Sta 1, 2, 4 ☐ Salt Crust ☐ Aquatic In ☑ Hydrogen	ined Leave A, and 4B (B11) vertebrates Sulfide Oc Rhizosphei	s (B13) dor (C1) res along	Living Roo		Dr Dr Sa	ater-Stained Leaves (B9) (MLRA 1 , 2 4A, and 4B) ainage Patterns (B10) y-Season Water Table (C2) turation Visible on Aerial Imagery (C	2,
Wetland Hy Primary India Surface High Wa Saturatio Water M Sedimer □ Drift Dep Algal Ma	drology Indicators cators (minimum of Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3)		ired; ch	Water-Sta 1, 2, 4 Salt Crust Aquatic In Hydrogen Oxidized F Presence	ined Leave A, and 4B (B11) vertebrate: Sulfide Oc Rhizospher of Reduce	s (B13) dor (C1) res along d Iron (C4	Living Roo	ots (C3)	Dr Dr Sa	ater-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) ainage Patterns (B10) y-Season Water Table (C2) turation Visible on Aerial Imagery (Co	2,
Wetland Hy Primary India Surface High Wa Saturatio Water M Sedimer Drift Dep Algal Ma Iron Dep	cators (minimum of Water (A1) ter Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) at or Crust (B4)		ired; ch	Water-Sta 1, 2, 4 Salt Crust Aquatic In Hydrogen Oxidized F Presence Recent Iro	ined Leave A, and 4B (B11) vertebrates Sulfide Oc Rhizospher of Reduce on Reduction	s (B13) dor (C1) res along d Iron (C4 on in Tille	Living Roo 4)	ots (C3)	☐ Wa	ater-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) ainage Patterns (B10) y-Season Water Table (C2) turation Visible on Aerial Imagery (Comorphic Position (D2) allow Aquitard (D3)	2,
Wetland Hy Primary India Surface High Wa Saturatio Water M Sedimer Drift Dep Algal Ma Iron Dep Surface	cators (minimum of Water (A1) ter Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5)	one requ		Water-Sta 1, 2, 4 Salt Crust Aquatic In Hydrogen Oxidized F Presence Recent Iro	ined Leave A, and 4B (B11) vertebrates Sulfide Oc Rhizospher of Reduce on Reduction	s (B13) dor (C1) res along d Iron (C ² on in Tille Plants (D	Living Roo 4) d Soils (C6	ots (C3)	☐ Wai	ater-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) ainage Patterns (B10) y-Season Water Table (C2) turation Visible on Aerial Imagery (Caeomorphic Position (D2) allow Aquitard (D3) C-Neutral Test (D5)	2,
Wetland Hy Primary India Surface High Wa Saturatio Water M Sedimer Drift Dep Algal Ma Iron Dep Surface	cators (minimum of Water (A1) hter Table (A2) on (A3) larks (B1) ht Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6)	one requ	(B7)	Water-Sta 1, 2, 4 Salt Crust Aquatic In Hydrogen Oxidized F Presence Recent Iro Stunted on	ined Leave A, and 4B (B11) vertebrates Sulfide Oc Rhizospher of Reduce on Reduction	s (B13) dor (C1) res along d Iron (C ² on in Tille Plants (D	Living Roo 4) d Soils (C6	ots (C3)	☐ Wai	ater-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) ainage Patterns (B10) y-Season Water Table (C2) turation Visible on Aerial Imagery (Casomorphic Position (D2) allow Aquitard (D3) aC-Neutral Test (D5) tised Ant Mounds (D6) (LRR A)	2,
Wetland Hy Primary India Surface High Wa Saturatio Water M Sedimer Drift Dep Algal Ma Iron Dep Surface	cators (minimum of Water (A1) ater Table (A2) on (A3) larks (B1) at Deposits (B2) oosits (B3) at or Crust (B4) oosits (B5) Soil Cracks (B6) on Visible on Aerial	one requ	(B7)	Water-Sta 1, 2, 4 Salt Crust Aquatic In Hydrogen Oxidized F Presence Recent Iro Stunted on	ined Leave A, and 4B (B11) vertebrates Sulfide Oc Rhizospher of Reduce on Reduction	s (B13) dor (C1) res along d Iron (C ² on in Tille Plants (D	Living Roo 4) d Soils (C6	ots (C3)	☐ Wai	ater-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) ainage Patterns (B10) y-Season Water Table (C2) turation Visible on Aerial Imagery (Casomorphic Position (D2) allow Aquitard (D3) aC-Neutral Test (D5) tised Ant Mounds (D6) (LRR A)	2,
Wetland Hy Primary India Surface High Wa Saturatio Water M Sedimer Drift Dep Algal Ma Iron Dep Surface Inundatio Sparsely	drology Indicators cators (minimum of Water (A1) Inter Table (A2) Inter Table (A2) Inter Table (A2) Inter Table (B1) Inter Table (B2) Inter Ta	one requi	(B7)	Water-Sta 1, 2, 4 Salt Crust Aquatic In Hydrogen Oxidized F Presence Recent Iro Stunted on	ined Leave A, and 4B (B11) vertebrates Sulfide Oc Rhizospher of Reduce on Reduction Stressed blain in Re	s (B13) dor (C1) res along d Iron (C ² on in Tille Plants (D	Living Roo 4) d Soils (C6	ots (C3)	☐ Wai	ater-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) ainage Patterns (B10) y-Season Water Table (C2) turation Visible on Aerial Imagery (Casomorphic Position (D2) allow Aquitard (D3) aC-Neutral Test (D5) tised Ant Mounds (D6) (LRR A)	2,
Wetland Hy Primary India Surface High Wa Saturatio Water M Sedimer Drift Dep Algal Ma Iron Dep Surface Inundatio Sparsely	drology Indicators cators (minimum of Water (A1) Inter Table (A2) Inter Table (A2) Inter Table (A2) Inter Table (B1) Int Deposits (B2) Inter Table (B2) Inter T	f one required in the second	(B7) e (B8)	Water-Sta 1, 2, 4 Salt Crust Aquatic In Hydrogen Oxidized F Presence Recent Iro Stunted or Other (Exp	ined Leave A, and 4B (B11) vertebrates Sulfide Oc Rhizospher of Reduce on Reduction r Stressed blain in Re s): 0	s (B13) dor (C1) res along d Iron (C ² on in Tille Plants (D	Living Roo 4) d Soils (C6	ots (C3)	☐ Wai	ater-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) ainage Patterns (B10) y-Season Water Table (C2) turation Visible on Aerial Imagery (Casomorphic Position (D2) allow Aquitard (D3) aC-Neutral Test (D5) tised Ant Mounds (D6) (LRR A)	2,
Wetland Hy Primary India Surface High Wa Saturatio Water M Sedimer Drift Dep Algal Ma Iron Dep Surface Inundatio Sparsely Field Obser Surface Wat	drology Indicators cators (minimum of Water (A1) Inter Table (A2) Inter Table (A2) Inter Table (B1) Int Deposits (B2) Int Deposits (B3) Int or Crust (B4) Inter Table (B5) Inter Table (B5) Inter Table (B6) Inter	one required in the second sec	(B7) e (B8) No 🗆	Water-Sta 1, 2, 4 Salt Crust Aquatic In Hydrogen Oxidized F Presence Recent Iro Stunted on Other (Exp	ined Leave A, and 4B (B11) vertebrates Sulfide Oc Rhizospher of Reduce on Reduction r Stressed blain in Res s): 0 s): 0	s (B13) dor (C1) res along d Iron (C ² on in Tille Plants (D	Living Roo 4) d Soils (C6 1) (LRR A)	ots (C3)	☐ Wa	ater-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) ainage Patterns (B10) y-Season Water Table (C2) turation Visible on Aerial Imagery (Casomorphic Position (D2) allow Aquitard (D3) aC-Neutral Test (D5) tised Ant Mounds (D6) (LRR A)	2,
Wetland Hy Primary India Surface High Wa Saturatio Water M Sedimer Drift Dep Algal Ma Iron Dep Surface Inundatio Sparsely Field Obser Surface Wat Water Table Saturation P (includes ca	drology Indicators cators (minimum of Water (A1) Inter Table (A2) Inter Table (A2) Inter Table (A2) Inter Table (B1) Int Deposits (B2) Int Deposits (B3) Int or Crust (B4) Int or Crust (B4) Inter Table (B2) Inte	Imagery ve Surface Yes 🏽 Yes 🛣 Yes 🛣	(B7) e (B8) No Water-Sta 1, 2, 4 Salt Crust Aquatic In Hydrogen Oxidized F Presence Recent Irc Stunted or Other (Exp	ined Leave A, and 4B (B11) vertebrates Sulfide Oc Rhizospher of Reduce on Reduction r Stressed blain in Res s): 0 s): 0 s): 0	s (B13) dor (C1) res along d Iron (C4 on in Tille Plants (D marks)	Living Roo 4) d Soils (C6 1) (LRR A)	ots (C3)	☐ W: ☐ Dr ☐ Dr ☐ Sa ☐ Ge ☐ Sh ☐ FA	ater-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) ainage Patterns (B10) y-Season Water Table (C2) turation Visible on Aerial Imagery (Comorphic Position (D2) allow Aquitard (D3) a.C-Neutral Test (D5) hised Ant Mounds (D6) (LRR A) post-Heave Hummocks (D7)	2,	
Wetland Hy Primary India Surface High Wa Saturatio Water M Sedimer Drift Dep Algal Ma Iron Dep Surface Inundatio Sparsely Field Obser Surface Wat Water Table Saturation P (includes ca	drology Indicators cators (minimum of Water (A1) ater Table (A2) on (A3) larks (B1) at Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6) on Visible on Aerial of Vegetated Concave evations: ter Present? Present?	Imagery ve Surface Yes 🏽 Yes 🛣 Yes 🛣	(B7) e (B8) No Water-Sta 1, 2, 4 Salt Crust Aquatic In Hydrogen Oxidized F Presence Recent Irc Stunted or Other (Exp	ined Leave A, and 4B (B11) vertebrates Sulfide Oc Rhizospher of Reduce on Reduction r Stressed blain in Res s): 0 s): 0 s): 0	s (B13) dor (C1) res along d Iron (C4 on in Tille Plants (D marks)	Living Roo 4) d Soils (C6 1) (LRR A)	ots (C3)	☐ W: ☐ Dr ☐ Dr ☐ Sa ☐ Ge ☐ Sh ☐ FA	ater-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) ainage Patterns (B10) y-Season Water Table (C2) turation Visible on Aerial Imagery (Comorphic Position (D2) allow Aquitard (D3) a.C-Neutral Test (D5) hised Ant Mounds (D6) (LRR A) post-Heave Hummocks (D7)	2,	
Wetland Hy Primary India Surface High Wa Saturatio Water M Sedimer Drift Dep Algal Ma Iron Dep Surface Inundatio Sparsely Field Obser Surface Wat Water Table Saturation P (includes ca	drology Indicators cators (minimum of Water (A1) Inter Table (A2) Inter Table (A2) Inter Table (A2) Inter Table (B1) Int Deposits (B2) Int Deposits (B3) Int or Crust (B4) Int or Crust (B4) Inter Table (B2) Inte	Imagery ve Surface Yes 🏽 Yes 🛣 Yes 🛣	(B7) e (B8) No Water-Sta 1, 2, 4 Salt Crust Aquatic In Hydrogen Oxidized F Presence Recent Irc Stunted or Other (Exp	ined Leave A, and 4B (B11) vertebrates Sulfide Oc Rhizospher of Reduce on Reduction r Stressed blain in Res s): 0 s): 0 s): 0	s (B13) dor (C1) res along d Iron (C4 on in Tille Plants (D marks)	Living Roo 4) d Soils (C6 1) (LRR A)	ots (C3)	☐ W: ☐ Dr ☐ Dr ☐ Sa ☐ Ge ☐ Sh ☐ FA	ater-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) ainage Patterns (B10) y-Season Water Table (C2) turation Visible on Aerial Imagery (Comorphic Position (D2) allow Aquitard (D3) a.C-Neutral Test (D5) hised Ant Mounds (D6) (LRR A) post-Heave Hummocks (D7)	2,	
Wetland Hy Primary India Surface High Wa Saturatio Water M Sedimer Drift Dep Algal Ma Iron Dep Surface Inundatio Sparsely Field Obser Surface Wat Water Table Saturation P (includes ca Describe Re	drology Indicators cators (minimum of Water (A1) Inter Table (A2) Inter Ta	Imagery ve Surface Yes 🏽 Yes 🛣 Yes 🛣 m gauge,	(B7) e (B8) No No No No monitor	Water-Sta 1, 2, 4 Salt Crust Aquatic In Hydrogen Oxidized F Presence Recent Irc Stunted or Other (Exp Depth (inche Depth (inche	ined Leave A, and 4B (B11) vertebrates Sulfide Oc Rhizospher of Reduce on Reduction r Stressed blain in Res s): 0 s): 0 s): 0	s (B13) dor (C1) res along d Iron (C4 on in Tille Plants (D marks)	Living Roo 4) d Soils (C6 1) (LRR A)	ots (C3)	☐ W: ☐ Dr ☐ Dr ☐ Sa ☐ Ge ☐ Sh ☐ FA	ater-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) ainage Patterns (B10) y-Season Water Table (C2) turation Visible on Aerial Imagery (Comorphic Position (D2) allow Aquitard (D3) a.C-Neutral Test (D5) hised Ant Mounds (D6) (LRR A) post-Heave Hummocks (D7)	2,
Wetland Hy Primary India Surface High Wa Saturatio Water M Sedimer Drift Dep Algal Ma Iron Dep Surface Inundatio Sparsely Field Obser Surface Wat Water Table Saturation P (includes ca Describe Re	drology Indicators cators (minimum of Water (A1) Inter Table (A2) Inter Table (A2) Inter Table (A2) Inter Table (B1) Int Deposits (B2) Int Deposits (B3) Int or Crust (B4) Int or Crust (B4) Inter Table (B2) Inte	Imagery ve Surface Yes 🏽 Yes 🛣 Yes 🛣 m gauge,	(B7) e (B8) No No No No monitor	Water-Sta 1, 2, 4 Salt Crust Aquatic In Hydrogen Oxidized F Presence Recent Irc Stunted or Other (Exp Depth (inche Depth (inche	ined Leave A, and 4B (B11) vertebrates Sulfide Oc Rhizospher of Reduce on Reduction r Stressed blain in Res s): 0 s): 0 s): 0	s (B13) dor (C1) res along d Iron (C4 on in Tille Plants (D marks)	Living Roo 4) d Soils (C6 1) (LRR A)	ots (C3)	☐ W: ☐ Dr ☐ Dr ☐ Sa ☐ Ge ☐ Sh ☐ FA	ater-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) ainage Patterns (B10) y-Season Water Table (C2) turation Visible on Aerial Imagery (Comorphic Position (D2) allow Aquitard (D3) a.C-Neutral Test (D5) hised Ant Mounds (D6) (LRR A) post-Heave Hummocks (D7)	2,
Wetland Hy Primary India Surface High Wa Saturatio Water M Sedimer Drift Dep Algal Ma Iron Dep Surface Inundatio Sparsely Field Obser Surface Wat Water Table Saturation P (includes ca Describe Re	drology Indicators cators (minimum of Water (A1) Inter Table (A2) Inter Ta	Imagery ve Surface Yes 🏽 Yes 🛣 Yes 🛣 m gauge,	(B7) e (B8) No No No No monitor	Water-Sta 1, 2, 4 Salt Crust Aquatic In Hydrogen Oxidized F Presence Recent Irc Stunted or Other (Exp Depth (inche Depth (inche	ined Leave A, and 4B (B11) vertebrates Sulfide Oc Rhizospher of Reduce on Reduction r Stressed blain in Res s): 0 s): 0 s): 0	s (B13) dor (C1) res along d Iron (C4 on in Tille Plants (D marks)	Living Roo 4) d Soils (C6 1) (LRR A)	ots (C3)	☐ W: ☐ Dr ☐ Dr ☐ Sa ☐ Ge ☐ Sh ☐ FA	ater-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) ainage Patterns (B10) y-Season Water Table (C2) turation Visible on Aerial Imagery (Comorphic Position (D2) allow Aquitard (D3) a.C-Neutral Test (D5) hised Ant Mounds (D6) (LRR A) post-Heave Hummocks (D7)	2,

Project/Site: 1042.0005 - Ravensdale	(City/County	r: Ravens	sdale/King	Sampling Date: 12/15/2017
Applicant/Owner: Ravensdale LLC				State: WA	Sampling Point: DP-24W
				ownship, Range: <u>01, 22N</u>	
					Slope (%): 0
Subregion (LRR): A2	_ _{Lat:} <u>47.3</u>	3544515	375754	Long: -121.9860606	61438 Datum: WGS84
Soil Map Unit Name: Beausite gravelly sandy loam				NWI classificat	ion: PSS
Are climatic / hydrologic conditions on the site typical for this	time of yea	r? Yes 🗌	No ເ (I	f no, explain in Remarks.)	
Are Vegetation $\underline{\hspace{0.1in}\hspace{0.1in}\hspace{0.1in}}$, Soil $\underline{\hspace{0.1in}\hspace{0.1in}}$, or Hydrology $\underline{\hspace{0.1in}\hspace{0.1in}\hspace{0.1in}}$ sign	ificantly dist	turbed?	Are "No	ormal Circumstances" pres	ent? Yes ☐ No 🗵
Are Vegetation, Soil, or Hydrology natu	rally problen	natic?	(If need	ed, explain any answers in	Remarks.)
SUMMARY OF FINDINGS - Attach site map	showing	samplin	g point le	ocations, transects,	important features, etc.
Hydrophytic Vegetation Present? Yes ☒ No ☐					
Hydric Soil Present? Yes ☒ No ☐			e Sampled		_
Wetland Hydrology Present? Yes ☒ No ☐		with	in a Wetlar	nd? Yes ☒ No) 🗌
Remarks: All three wetland criteria observed. Acc	rumulated	l precipit	ation 115	% of normal for the 20	
(Sea-Tac International Airport). Data p	ot collecte	ed in We	tland J.	70 Of Hoffild for the 20	317/2010 water year
VEGETATION – Use scientific names of plant	ts.				
Trace Christians (Diet sines 20 ft)		Dominant		Dominance Test works	heet:
Tree Stratum (Plot size: 30 ft) 1. Alnus rubra	<u>% Cover</u> 30	Yes	FAC	Number of Dominant Spe That Are OBL, FACW, or	
2					
3				Total Number of Domina Species Across All Strata	_
4.					、 ,
	30	= Total C	over	Percent of Dominant Spe That Are OBL, FACW, or	
Sapling/Shrub Stratum (Plot size: 15 ft) 1. Rubus armeniacus	30	Yes	FAC	Prevalence Index work	chooti
2. Cornus alba	25	Yes	FACW	Total % Cover of:	
3					x 1 = <u>50</u>
4				FACW species 25	
5.					x 3 = 180
	55	= Total C	over	FACU species 0	x 4 = <u>0</u>
Herb Stratum (Plot size: 5 ft)			0.01	UPL species 0	x 5 = <u>0</u>
1. Typha latifolia	30	Yes		Column Totals: 135	(A) <u>280</u> (B)
2. Scirpus microcarpus	20	<u>Yes</u>	OBL	Prevalence Index :	
3				Hydrophytic Vegetation	
4				Rapid Test for Hydro	
5				Dominance Test is >	
6 7				▼ Prevalence Index is :	
8.					ations ¹ (Provide supporting
9.					or on a separate sheet)
10				☐ Wetland Non-Vascul	
11					nytic Vegetation¹ (Explain)
Woody Vine Stratum (Plot size: 30 ft)	50	= Total C	over	be present, unless distur	and wetland hydrology must bed or problematic.
1		No			
2				Hydrophytic Vegetation	
	0	= Total C	over		⊠ No □
% Bare Ground in Herb Stratum 50					
Remarks: FAC-OBL vegetation observed					

Depth	ription: (Describ Matrix	e to the de	pui nee		x Features		or commi	i uie ab	Sence	oi indicato	15.)	
(inches)	Color (moist)	%	Color (moist)	<u> </u>		Loc ²	Textu	re		Remarks	
0 - 12	10YR 3/2	100	-	· · · · · ·	-	-	-	SaLo)	Sandy Id	oam	
			-		-							
-			-		-							
	-				-							
-	-											
					_ :							
¹Type: C=C	oncentration, D=D	enletion RM	/I=Reduc	ed Matrix CS	S=Covered	l or Coate	ed Sand Gr	ains	² l oc	ation· PI =F	Pore Lining	g, M=Matrix.
	Indicators: (Appl						od Odila Ol					ydric Soils³:
☐ Histosol				ndy Redox (S		,				Muck (A10	-	•
	ipedon (A2)			ripped Matrix						Parent Mate		
☐ Black His				amy Mucky M	. ,) (except	MLRA 1)			Shallow Da	, ,	(TF12)
	n Sulfide (A4)			amy Gleyed N			,		-	r (Explain in		
☐ Depleted	Below Dark Surfa	ce (A11)	☐ De	pleted Matrix	(F3)							
☐ Thick Da	rk Surface (A12)			dox Dark Sur	. ,			3	ndicato	rs of hydrop	hytic vege	tation and
	ucky Mineral (S1)			pleted Dark S	•	7)				nd hydrolog		
	leyed Matrix (S4)		☐ Re	dox Depressi	ons (F8)				unless	s disturbed	or problem	atic.
	_ayer (if present):											
Depth (in	ches):							Hydr	ic Soil	Present?	Yes 🗵	No 🗌
Remarks:												
Data collec	ted in deeply p	onded a	ea. Inc	dicator A4 c	bserved	d.						
HYDROLO												
1	drology Indicator								_			
Primary India	cators (minimum o	f one requir							Secon	dary Indicat	tors (2 or n	nore required)
➤ Surface \	` '] Water-Stair	ned Leave	es (B9) (e :	xcept MLR	A	☐ Wa		-	B9) (MLRA 1, 2 ,
	ter Table (A2)			1, 2, 4 <i>A</i>	A, and 4B))				4A, and 4	В)	
▼ Saturation	` '] Salt Crust (,					ainage Patt	, ,	
☐ Water Mater Mat	arks (B1)			Aquatic Inv	ertebrates	s (B13)			☐ Dr	y-Season W	/ater Table	e (C2)
☐ Sedimen	t Deposits (B2)		×	☑ Hydrogen S	Sulfide Od	or (C1)			☐ Sa	turation Vis	ible on Ae	rial Imagery (C9)
☐ Drift Dep	osits (B3)			Oxidized R	hizospher	es along	Living Roof	ts (C3)	☐ Ge	eomorphic F	Position (D2	2)
☐ Algal Ma	t or Crust (B4)] Presence of	of Reduced	d Iron (C4	!)		☐ Sh	allow Aquit	ard (D3)	
☐ Iron Dep	osits (B5)			Recent Iror	n Reductio	n in Tille	d Soils (C6)	☐ FA	،C-Neutral ⅂	Test (D5)	
☐ Surface	Soil Cracks (B6)] Stunted or	Stressed I	Plants (D	1) (LRR A)		☐ Ra	ised Ant Mo	ounds (D6)	(LRR A)
	on Visible on Aeria		-	Other (Exp	lain in Rer	marks)			☐ Fro	ost-Heave H	łummocks	(D7)
☐ Sparsely	Vegetated Conca	ve Surface	(B8)									
Field Obser	vations:											
Surface Wat	er Present?	Yes 🗷 🕦	lo 🔲 🛚 I	Depth (inches	_{:):} <u>+12</u>							
Water Table	Present?	Yes 🔀 🕦	lo 🔲 🛚 I	Depth (inches	s): 0							
Saturation P	resent?			· · Depth (inches			Wetla	and Hvo	drology	Present?	Yes 🛛	No □
(includes car	oillary fringe)											- -
Describe Re	corded Data (strea	m gauge, n	nonitoring	g well, aerial p	photos, pre	evious ins	spections),	if availa	ble:			
Remarks:												
Hydrologic	indicators A1,	A2, A3, a	and C1	observed.								
		,										

Project/Site: 1042.0005 - Ravesdale	(City/Coun	_{ity:} Ravens	sdale/King	Sampling Date: 12/15/2017
Applicant/Owner: Ravensdale LLC				State: WA	Sampling Point: DP-25U
				ownship, Range: <u>01, 22N</u>	
					e Slope (%): 20
Subregion (LRR): A2	_ _{Lat:} <u>47.3</u>	347433	1619659	Long: -121.9764803	16484 Datum: WGS84
Soil Map Unit Name: Beausite gravelly sandy loam				NWI classificat	tion: N/A
Are climatic / hydrologic conditions on the site typical for this	time of yea	r? Yes [□ No 🗷 (I	f no, explain in Remarks.)	
Are Vegetation, Soil, or Hydrology sign	ificantly dist	turbed?	Are "No	ormal Circumstances" pres	ent? Yes 🗌 No 🗵
Are Vegetation, Soil, or Hydrology natu	rally problen	natic?	(If need	ed, explain any answers in	Remarks.)
SUMMARY OF FINDINGS - Attach site map	showing	sampli	ng point le	ocations, transects,	important features, etc.
Hydrophytic Vegetation Present? Yes ☒ No ☐					
Hydric Soil Present? Yes ☐ No 🗵			he Sampled		_
Wetland Hydrology Present? Yes ☒ No ☐		wit	hin a Wetlar	nd? Yes ☐ No) X
Remarks: Accumulated precipitation 115% of nor	mal for th	e 2017	/2018 wate	er vear (Sea-Tac Inter	mational Airport)
7 toodinatated proofphation 11070 of Hol	11101 101 111	0 2017	2010 Wate	or your (oca rao inter	national Alliporty.
VEGETATION – Use scientific names of plant					
		Dominar	nt Indicator	Dominance Test works	heet:
Tree Stratum (Plot size: 30 ft)	% Cover			Number of Dominant Sp	ecies
1. Alnus rubra	60	Yes	FAC	That Are OBL, FACW, or	r FAC: <u>2</u> (A)
2				Total Number of Domina	
3		-		Species Across All Strata	a: <u>2</u> (B)
4	60	= Total	Cover	Percent of Dominant Spe That Are OBL, FACW, or	
Sapling/Shrub Stratum (Plot size: 15 ft)	400	V	E40		
1. Rubus armeniacus	100	Yes	FAC	Prevalence Index work	
2				Total % Cover of:	$ \underline{\qquad \qquad} Multiply by: \\ x 1 = \underline{0} $
3				· ·	x = 0 x = 0
4		-			$x = \frac{3}{480}$
5	100	= Total	Cover		$x = \frac{100}{0}$
Herb Stratum (Plot size: 5 ft)		- Total	Covei		$x = \frac{1}{0}$
1			<u> </u>	Column Totals: 160	(A) <u>480</u> (B)
2					
3				Prevalence Index	
4				Hydrophytic Vegetation	
5				Rapid Test for Hydro	
6				Dominance Test is >	
7				Prevalence Index is:	sations¹ (Provide supporting
8					or on a separate sheet)
9				☐ Wetland Non-Vascul	ar Plants ¹
10			· ——	☐ Problematic Hydroph	nytic Vegetation¹ (Explain)
11	0	= Total	Cover		and wetland hydrology must
Woody Vine Stratum (Plot size: 30 ft)		- Total	OOVCI	be present, unless distur	bed or problematic.
1				Hydrophytic	
2	0			Vegetation	₩ Na □
% Bare Ground in Herb Stratum 100	0	= Total	Cover	Present? Yes	No □
Remarks:				l	
Aggressive, non-diagnostic FAC specie	yiezuo se	ea.			

Sampling Point: DP-25I

Depth	Matrix	(Redo	x Features				
(inches)	Color (moist)	%	Colc	or (moist)		oe ¹ Loc ²	Textu	re	Remarks
0 - 14	10YR 3/2	100					SaLc)	Sandy loam
6 - 14	10YR 3/6	100					SaLo)	Sandy gravelly loam
									, ,
					-				
	-								
							_		
	-								
 -	-								
	oncentration, D=D					Coated Sand			ation: PL=Pore Lining, M=Matrix.
-	Indicators: (App	ilicable to							s for Problematic Hydric Soils ³ :
Histosol	, ,			Sandy Redox (_		Muck (A10)
☐ Histic Ep	oipedon (A2)			Stripped Matrix	(S6) ⁄lineral (F1) (ex	cont MI DA			Parent Material (TF2) Shallow Dark Surface (TF12)
	en Sulfide (A4)			Loamy Gleyed		cept wicks	') L	-	(Explain in Remarks)
	d Below Dark Surf	ace (A11)		Depleted Matrix				_ 0	(Explain in Remains)
	ark Surface (A12)	(,		Redox Dark Su			3	ndicator	s of hydrophytic vegetation and
☐ Sandy M	lucky Mineral (S1))		Depleted Dark	, ,				d hydrology must be present,
-	Gleyed Matrix (S4)			Redox Depress	ions (F8)			unless	disturbed or problematic.
Restrictive	Layer (if present)):							
Type:									
Depth (in	ches):						Hydr	ic Soil I	Present? Yes 🗌 No 🗵
Remarks:							•		
No hydric	soil indicators	observe	d						
HADBULO	nc.v								
									
Wetland Hy	drology Indicato		uirod: ab	ook all that ann	1.0			Sagan	dany Indicators (2 or more required)
Wetland Hy Primary Indi	drology Indicator		uired; ch			0) (dary Indicators (2 or more required)
Wetland Hy Primary Indi ☐ Surface	rdrology Indicator cators (minimum o Water (A1)		uired; ch	☐ Water-Sta	ned Leaves (B	9) (except M	LRA		ter-Stained Leaves (B9) (MLRA 1, 2
Wetland Hy Primary Indi ☐ Surface ☑ High Wa	rdrology Indicator cators (minimum o Water (A1) ater Table (A2)		uired; ch	☐ Water-Sta	ined Leaves (B9 A, and 4B)	9) (except M	LRA	☐ Wa	ter-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B)
Wetland Hy Primary Indi ☐ Surface ☑ High Wa ☑ Saturation	cators (minimum o Water (A1) ater Table (A2) on (A3)		uired; ch	☐ Water-Sta 1, 2, 4	ined Leaves (B9 A, and 4B) (B11)		LRA	☐ Wa	ter-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) ainage Patterns (B10)
Wetland Hy Primary Indi ☐ Surface ☑ High Wa ☑ Saturatic ☐ Water M	cators (minimum o Water (A1) ater Table (A2) on (A3) larks (B1)		uired; ch	Water-Sta 1, 2, 4 Salt Crust Aquatic In	ined Leaves (B9 A, and 4B) (B11) vertebrates (B1	3)	LRA	☐ Wa	tter-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) ainage Patterns (B10) t-Season Water Table (C2)
Wetland Hy Primary Indi ☐ Surface ☑ High Wa ☑ Saturatio ☐ Water M ☐ Sedimen	cators (minimum of Water (A1) ater Table (A2) on (A3) larks (B1) on Deposits (B2)		uired; ch	Water-Sta 1, 2, 4 Salt Crust Aquatic In	ined Leaves (B9 A, and 4B) (B11) vertebrates (B1: Sulfide Odor (C	3)		☐ Wa	tter-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) ainage Patterns (B10) a-Season Water Table (C2) attraction Visible on Aerial Imagery (C9
Wetland Hy Primary Indi Surface High Wa Saturatio Water M Sedimer Drift Dep	rdrology Indicator cators (minimum of Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3)		uired; cho	Water-Sta 1, 2, 4. Salt Crust Aquatic In Hydrogen Oxidized F	ined Leaves (B9 A, and 4B) (B11) vertebrates (B1: Sulfide Odor (C Rhizospheres al	3) C1) long Living R		☐ Wa	tter-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) sinage Patterns (B10) r-Season Water Table (C2) turation Visible on Aerial Imagery (C9 comorphic Position (D2)
Wetland Hy Primary Indi Surface High Wa Saturatio Water M Sedimer Drift Dep Algal Ma	cators (minimum of Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) oosits (B3) at or Crust (B4)		uired; che	Water-Sta 1, 2, 4. Salt Crust Aquatic In Hydrogen Oxidized F Presence	ined Leaves (B9 A, and 4B) (B11) vertebrates (B1: Sulfide Odor (C Rhizospheres al of Reduced Iror	3) C1) long Living R n (C4)	oots (C3)	Dra Dry Sai	ter-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) ainage Patterns (B10) /-Season Water Table (C2) turation Visible on Aerial Imagery (C9 omorphic Position (D2) allow Aquitard (D3)
Wetland Hy Primary Indi Surface High Wa Saturatic Water M Sedimer Drift Dep Algal Ma	cators (minimum of Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5)		uired; ch	Water-Sta 1, 2, 4. Salt Crust Aquatic In Hydrogen Oxidized F Presence	ined Leaves (BS A, and 4B) (B11) vertebrates (B1: Sulfide Odor (C Rhizospheres al of Reduced Iror n Reduction in	3) C1) long Living R n (C4) Tilled Soils (oots (C3)	Dra Dry Sai	ter-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) ainage Patterns (B10) y-Season Water Table (C2) turation Visible on Aerial Imagery (C9 omorphic Position (D2) allow Aquitard (D3) C-Neutral Test (D5)
Primary Indi Surface High Wa Saturatio Water M Sedimer Drift Dep Algal Ma Iron Dep Surface	cators (minimum of Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) cosits (B3) at or Crust (B4) cosits (B5) Soil Cracks (B6)	of one requ		Water-Sta 1, 2, 4. Salt Crust Aquatic In Hydrogen Oxidized F Presence Recent Iro Stunted or	ned Leaves (BSA, and 4B) (B11) vertebrates (B1: Sulfide Odor (CR) Rhizospheres al of Reduced Iror n Reduction in Stressed Plant	3) long Living R n (C4) Tilled Soils (ts (D1) (LRR	oots (C3)	☐ Wa ☐ Dra ☐ Dry ☐ Ge ☐ Sha ☐ FA	ter-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) ainage Patterns (B10) A-Season Water Table (C2) auration Visible on Aerial Imagery (C9 comorphic Position (D2) allow Aquitard (D3) C-Neutral Test (D5) ised Ant Mounds (D6) (LRR A)
Wetland Hy Primary Indi Surface High Wa Saturatio Water M Sedimer Drift Dep Algal Ma Iron Dep Surface	cators (minimum of Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) cosits (B3) at or Crust (B4) cosits (B5) Soil Cracks (B6) on Visible on Aeria	of one requ	· (B7)	Water-Sta 1, 2, 4. Salt Crust Aquatic In Hydrogen Oxidized F Presence Recent Iro Stunted or	ined Leaves (BS A, and 4B) (B11) vertebrates (B1: Sulfide Odor (C Rhizospheres al of Reduced Iror n Reduction in	3) long Living R n (C4) Tilled Soils (ts (D1) (LRR	oots (C3)	☐ Wa ☐ Dra ☐ Dry ☐ Ge ☐ Sha ☐ FA	ter-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) ainage Patterns (B10) y-Season Water Table (C2) turation Visible on Aerial Imagery (C9 omorphic Position (D2) allow Aquitard (D3) C-Neutral Test (D5)
Wetland Hy Primary Indi Surface High Wa Saturatio Water M Sedimer Drift Dep Algal Ma Iron Dep Surface Inundatio Sparsely	cators (minimum of water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) cosits (B3) at or Crust (B4) cosits (B5) Soil Cracks (B6) on Visible on Aeria of Vegetated Concar	of one requ	· (B7)	Water-Sta 1, 2, 4. Salt Crust Aquatic In Hydrogen Oxidized F Presence Recent Iro Stunted or	ned Leaves (BSA, and 4B) (B11) vertebrates (B1: Sulfide Odor (CR) Rhizospheres al of Reduced Iror n Reduction in Stressed Plant	3) long Living R n (C4) Tilled Soils (ts (D1) (LRR	oots (C3)	☐ Wa ☐ Dra ☐ Dry ☐ Ge ☐ Sha ☐ FA	ter-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) ainage Patterns (B10) A-Season Water Table (C2) auration Visible on Aerial Imagery (C9 comorphic Position (D2) allow Aquitard (D3) C-Neutral Test (D5) ised Ant Mounds (D6) (LRR A)
Wetland Hy Primary Indi Surface High Wa Saturatic Water M Sedimer Drift Dep Algal Ma Iron Dep Surface Inundatic Sparsely	drology Indicator cators (minimum of Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6) on Visible on Aeria of Vegetated Concar	of one requ al Imagery ave Surfac	r (B7) be (B8)	Water-Sta 1, 2, 4, Salt Crust Aquatic In Hydrogen Oxidized F Presence Recent Iro Stunted or Other (Exp	ined Leaves (BSA, and 4B) (B11) vertebrates (B1: Sulfide Odor (CR) Rhizospheres alof Reduced Iror n Reduction in Stressed Plant	3) long Living R n (C4) Tilled Soils (ts (D1) (LRR	oots (C3)	☐ Wa ☐ Dra ☐ Dry ☐ Ge ☐ Sha ☐ FA	ter-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) ainage Patterns (B10) A-Season Water Table (C2) auration Visible on Aerial Imagery (C9 comorphic Position (D2) allow Aquitard (D3) C-Neutral Test (D5) ised Ant Mounds (D6) (LRR A)
Wetland Hy Primary Indi Surface High Wa Saturatio Water M Sedimer Drift Dep Algal Ma Iron Dep Surface Inundatio Sparsely Field Obser	cators (minimum of water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) cosits (B3) at or Crust (B4) cosits (B5) Soil Cracks (B6) on Visible on Aeria of Vegetated Concar creations:	of one requal Imagery ave Surface Yes □	e (B7) ce (B8) No 🗵	Water-Sta 1, 2, 4, Salt Crust Aquatic In Hydrogen Oxidized F Presence Recent Iro Stunted or Other (Exp	ined Leaves (BSA, and 4B) (B11) vertebrates (B1: Sulfide Odor (CR) Rhizospheres all of Reduced Iror in Reduction in Stressed Plant plain in Remarks	3) long Living R n (C4) Tilled Soils (ts (D1) (LRR	oots (C3)	☐ Wa ☐ Dra ☐ Dry ☐ Ge ☐ Sha ☐ FA	ter-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) ainage Patterns (B10) A-Season Water Table (C2) auration Visible on Aerial Imagery (C9 comorphic Position (D2) allow Aquitard (D3) C-Neutral Test (D5) ised Ant Mounds (D6) (LRR A)
Wetland Hy Primary Indi □ Surface ☑ High Wa ☑ Saturatio □ Water M □ Sedimer □ Drift Dep □ Algal Ma □ Iron Dep □ Surface □ Inundatio □ Sparsely Field Obser Surface Wat Water Table	cators (minimum of cators (minimum of cators (minimum of water (A1)) ater Table (A2) on (A3) larks (B1) on Deposits (B2) osits (B3) at or Crust (B4) osits (B5) Soil Cracks (B6) on Visible on Aeria of Vegetated Concar or vations: ter Present?	of one requal Imagery ave Surface Yes ☑ Yes ☑	r (B7) ce (B8) No ⊠ No □	Water-Sta 1, 2, 4, Salt Crust Aquatic In Hydrogen Oxidized F Presence Recent Iro Stunted or Other (Exp	ined Leaves (BSA, and 4B) (B11) vertebrates (B1: Sulfide Odor (CR) Rhizospheres all of Reduced Iror n Reduction in Stressed Plant olain in Remarks s):	3) long Living R n (C4) Tilled Soils (ts (D1) (LRR s)	oots (C3) C6) A)	☐ Wa	ter-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) ainage Patterns (B10) because Water Table (C2) turation Visible on Aerial Imagery (C9) comorphic Position (D2) allow Aquitard (D3) C-Neutral Test (D5) ised Ant Mounds (D6) (LRR A) ist-Heave Hummocks (D7)
Wetland Hy Primary Indi Surface High Water M Sedimer Drift Dep Algal Mater M Iron Dep Surface Inundation Sparsely Field Obser Surface Water Table Saturation P (includes ca	cators (minimum of cators (minim	of one requal Imagery ave Surface Yes ☑ Yes ☑ Yes ☑	(B7) ce (B8) No 🗵 No 🗆	Water-Sta 1, 2, 4. Salt Crust Aquatic In Hydrogen Oxidized F Presence Recent Iro Stunted or Other (Exp	ined Leaves (BSA, and 4B) (B11) Vertebrates (B1: Sulfide Odor (CR) Rhizospheres all of Reduced Iror in Reduction in Stressed Plant (Dain in Remarks) (S): (B): (C): (D): (D): (D): (D): (D): (D): (D): (D	3) long Living R n (C4) Tilled Soils (its (D1) (LRR s)	oots (C3) C6) A)	☐ Wall Draw Dry Gelling Gelling FA	ter-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) ainage Patterns (B10) A-Season Water Table (C2) auration Visible on Aerial Imagery (C9 comorphic Position (D2) allow Aquitard (D3) C-Neutral Test (D5) ised Ant Mounds (D6) (LRR A)
Wetland Hy Primary Indi Surface High Water M Sedimer Drift Dep Algal Mater M Iron Dep Surface Inundation Sparsely Field Obser Surface Water Table Saturation P (includes ca	cators (minimum of cators (minimum of cators (minimum of water (A1)) ater Table (A2) on (A3) ater Table (B2) on (A3) at Deposits (B2) onsits (B3) at or Crust (B4) onsits (B5) Soil Cracks (B6) on Visible on Aeria of Vegetated Concators ter Present? Present?	of one requal Imagery ave Surface Yes ☑ Yes ☑ Yes ☑	(B7) ce (B8) No 🗵 No 🗆	Water-Sta 1, 2, 4. Salt Crust Aquatic In Hydrogen Oxidized F Presence Recent Iro Stunted or Other (Exp	ined Leaves (BSA, and 4B) (B11) Vertebrates (B1: Sulfide Odor (CR) Rhizospheres all of Reduced Iror in Reduction in Stressed Plant (Dain in Remarks) (S): (B): (C): (D): (D): (D): (D): (D): (D): (D): (D	3) long Living R n (C4) Tilled Soils (its (D1) (LRR s)	oots (C3) C6) A)	☐ Wall Draw Dry Gelling Gelling FA	ter-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) ainage Patterns (B10) because Water Table (C2) turation Visible on Aerial Imagery (C9) comorphic Position (D2) allow Aquitard (D3) C-Neutral Test (D5) ised Ant Mounds (D6) (LRR A) ist-Heave Hummocks (D7)
Wetland Hy Primary Indi Surface High Water M Sedimer Drift Dep Algal Mater M Iron Dep Surface Inundation Sparsely Field Obser Surface Water Table Saturation P (includes ca	cators (minimum of cators (minim	of one requal Imagery ave Surface Yes ☑ Yes ☑ Yes ☑	(B7) ce (B8) No 🗵 No 🗆	Water-Sta 1, 2, 4. Salt Crust Aquatic In Hydrogen Oxidized F Presence Recent Iro Stunted or Other (Exp	ined Leaves (BSA, and 4B) (B11) Vertebrates (B1: Sulfide Odor (CR) Rhizospheres all of Reduced Iror in Reduction in Stressed Plant (Dain in Remarks) (S): (B): (C): (D): (D): (D): (D): (D): (D): (D): (D	3) long Living R n (C4) Tilled Soils (its (D1) (LRR s)	oots (C3) C6) A)	☐ Wall Draw Dry Gelling Gelling FA	ter-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) ainage Patterns (B10) because Water Table (C2) turation Visible on Aerial Imagery (C9) comorphic Position (D2) allow Aquitard (D3) C-Neutral Test (D5) ised Ant Mounds (D6) (LRR A) ist-Heave Hummocks (D7)
Wetland Hy Primary Indi Surface High Water M Sedimer Drift Dep Algal Mater M Iron Dep Surface Inundation Sparsely Field Obser Surface Water Table Saturation P (includes ca	cators (minimum of cators (minim	of one requal Imagery ave Surface Yes ☑ Yes ☑ Yes ☑	(B7) ce (B8) No 🗵 No 🗆	Water-Sta 1, 2, 4. Salt Crust Aquatic In Hydrogen Oxidized F Presence Recent Iro Stunted or Other (Exp	ined Leaves (BSA, and 4B) (B11) Vertebrates (B1: Sulfide Odor (CR) Rhizospheres all of Reduced Iror in Reduction in Stressed Plant (Dain in Remarks) (S): (B): (C): (D): (D): (D): (D): (D): (D): (D): (D	3) long Living R n (C4) Tilled Soils (its (D1) (LRR s)	oots (C3) C6) A)	☐ Wall Draw Dry Gelling Gelling FA	ter-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) ainage Patterns (B10) because Water Table (C2) turation Visible on Aerial Imagery (C9) comorphic Position (D2) allow Aquitard (D3) C-Neutral Test (D5) ised Ant Mounds (D6) (LRR A) ist-Heave Hummocks (D7)
Wetland Hy Primary Indi Surface High Water M Sedimer Drift Dep Algal Mater M Iron Dep Surface Inundation Sparsely Field Obser Surface Water Table Saturation P (includes ca Describe Re	cators (minimum of cators (minim	of one requal Imagery ave Surface Yes ☑ Yes ☑ Yes ☑ am gauge	No 🗵 No 🗆 No 🗆	Water-Sta 1, 2, 4. Salt Crust Aquatic In Hydrogen Oxidized F Presence Recent Iro Stunted or Other (Exp Depth (inches Depth (inches	ined Leaves (BSA, and 4B) (B11) Vertebrates (B1: Sulfide Odor (CR) Rhizospheres all of Reduced Iror in Reduction in Stressed Plant (Sain in Remarks) Si: O photos, previous	3) long Living R n (C4) Tilled Soils (I ts (D1) (LRR s) W us inspections	oots (C3) C6) A) etland Hyd	☐ Wa ☐ Dra ☐ Dry ☐ Ge ☐ Sha ☐ FA ☐ Fro	ter-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) ainage Patterns (B10) because Water Table (C2) turation Visible on Aerial Imagery (C9) comorphic Position (D2) allow Aquitard (D3) C-Neutral Test (D5) ised Ant Mounds (D6) (LRR A) ist-Heave Hummocks (D7)
Wetland Hy Primary Indi Surface High Water M Sedimer Drift Dep Algal Mater M Iron Dep Surface Inundation Sparsely Field Obser Surface Water Table Saturation P (includes ca Describe Re	cators (minimum of cators (minim	of one requal Imagery ave Surface Yes ☑ Yes ☑ Yes ☑ am gauge	No 🗵 No 🗆 No 🗆	Water-Sta 1, 2, 4. Salt Crust Aquatic In Hydrogen Oxidized F Presence Recent Iro Stunted or Other (Exp Depth (inches Depth (inches	ined Leaves (BSA, and 4B) (B11) Vertebrates (B1: Sulfide Odor (CR) Rhizospheres all of Reduced Iror in Reduction in Stressed Plant (Sain in Remarks) Si: O photos, previous	3) long Living R n (C4) Tilled Soils (I ts (D1) (LRR s) W us inspections	oots (C3) C6) A) etland Hyd	☐ Wa ☐ Dra ☐ Dry ☐ Ge ☐ Sha ☐ FA ☐ Fro	Atter-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) ainage Patterns (B10) A-Season Water Table (C2) Attraction Visible on Aerial Imagery (C9) comorphic Position (D2) allow Aquitard (D3) C-Neutral Test (D5) ised Ant Mounds (D6) (LRR A) ast-Heave Hummocks (D7) Present? Yes No

Project/Site: 1042.0005 - Ravesdale		City/C	ounty	: Ravens	sdale/King	Sampling Date: 12/15/2017
Applicant/Owner: Ravensdale LLC						Sampling Point: DP-26U
Investigator(s): Richard Peel				Section, To	ownship, Range: <u>01, 22</u> 1	N, 06E & 07E
						Slope (%): 10
Subregion (LRR): A2	Lat: 47.	3474	4468	370827	Long: -121.9764889	949845 Datum: WGS84
Soil Map Unit Name: Beausite gravelly sandy loam					NWI classifica	
Are climatic / hydrologic conditions on the site typical for this						
Are Vegetation, Soil, or Hydrology sign	ificantly dis	turbec	1?	Are "No	ormal Circumstances" pres	ent? Yes □ No 🗷
Are Vegetation, Soil, or Hydrology nature				(If need	ed, explain any answers ir	Remarks.)
SUMMARY OF FINDINGS - Attach site map s				g point le	ocations, transects,	important features, etc.
Hydrophytic Vegetation Present? Yes ☐ No 🗵						
Hydrophytic Vegetation Present? Yes ☐ No ☒ Hydric Soil Present? Yes ☐ No ☒				e Sampled		_
Wetland Hydrology Present? Yes ☐ No 🗵			withi	in a Wetlar	nd? Yes □ N	o 🔀
Remarks: No wetland criteria observed. Accumul	ated prec	initat	tion '	115% of	normal for the 2017/2	018 water vear (Sea-Tac
International Airport). Data collected in	upland a	rea b	etwe	een Wetl	and J and Wetland K	
VEGETATION – Use scientific names of plant	:S.					
	Absolute			Indicator	Dominance Test works	heet:
Tree Stratum (Plot size: 30 ft) 1. Pseudotsuga menziesii	% Cover 30	Spec Ye:		Status FACU	Number of Dominant Sp	
		-		1700	That Are OBL, FACW, o	r FAC: <u>2</u> (A)
2					Total Number of Domina	
4					Species Across All Strat	a: <u>4</u> (B)
7.	30	= To	tal Co	over	Percent of Dominant Sp That Are OBL, FACW, o	
Sapling/Shrub Stratum (Plot size: 15 ft)					That Ale Obc, I ACW, o	11AC. <u>3070</u> (A/B)
1. Rubus armeniacus	90	Ye		FAC	Prevalence Index work	
2. Acer circinatum	30	Ye	<u>s</u>	FAC	Total % Cover of:	
3						x 1 = 0
4						x = 0
5	120				FAC species 120 50	x 3 = <u>360</u>
Herb Stratum (Plot size: <u>5 ft</u>)	120	= Tc	otal Co	over	•	x = 200 x = 0
1. Polystichum munitum	20	Ye	s	FACU	Column Totals: 170	(A) <u>560</u> (B)
2						
3					Prevalence Index	
4					Hydrophytic Vegetatio	
5		. ——			Rapid Test for Hydro	
6					☐ Dominance Test is >	
7					☐ Prevalence Index is	
8						tations¹ (Provide supporting or on a separate sheet)
9					☐ Wetland Non-Vascu	•
10					☐ Problematic Hydropl	hytic Vegetation¹ (Explain)
11	20		4-1-0			and wetland hydrology must
Woody Vine Stratum (Plot size: 30 ft)	20	= 10	otal Co	over	be present, unless distu	rbed or problematic.
1		No				
2					Hydrophytic Vegetation	
	0	= To	otal Co	over	•	s □ No ⊠
% Bare Ground in Herb Stratum 80						_
Remarks: FAC-FACU vegetation observed.						

Sampling Point: DP-26

		e to the d	epth ne				or confirn	n the ab	osence of indicators.)
Depth (inches)	Matrix Color (moist)	%	Colo	r (moist)	<u>x Features</u> %	Type ¹	Loc ²	Textur	re Remarks
0 - 14	10YR3/2	100	<u> </u>	(.,,,,,		SaLo	
6 - 14	10YR 3/4	100						SaLo	<u> </u>
	10111 0/4							Oulo	
			· —						
			· · ·					'	
			· -						
		_						-	
			-						
	oncentration, D=De						ed Sand G		² Location: PL=Pore Lining, M=Matrix.
_	Indicators: (Appli	cable to a				d.)			ndicators for Problematic Hydric Soils ³ :
Histosol	• •			Sandy Redox (S	-				2 cm Muck (A10)
	ipedon (A2)			Stripped Matrix		/	MI DA 4)	_	Red Parent Material (TF2)
☐ Black Hi	n Sulfide (A4)			.oamy Mucky N .oamy Gleyed I	, ,	(except	WILKA 1)		☐ Very Shallow Dark Surface (TF12)☐ Other (Explain in Remarks)
	l Below Dark Surfac	ce (A11)		Depleted Matrix				L	J Other (Explain in Nemarks)
-	rk Surface (A12)	oo (, ,		Redox Dark Su				³ 1	Indicators of hydrophytic vegetation and
	ucky Mineral (S1)			Depleted Dark S		·)			wetland hydrology must be present,
☐ Sandy G	leyed Matrix (S4)		□ F	Redox Depress	ions (F8)				unless disturbed or problematic.
Restrictive	Layer (if present):								
Type:									
Depth (in	ches):							Hydr	ric Soil Present? Yes ☐ No 🗵
Remarks:								•	
No hydric s	soil indicators o	bserved							
HYDROLO	GY								
	drology Indicators	••							
_	cators (minimum of		red: che	ock all that anni	v)				Secondary Indicators (2 or more required)
	Water (A1)	One requi		☐ Water-Stai		c (B0) (o x	voont MI E		☐ Water-Stained Leaves (B9) (MLRA 1, 2,
	ter Table (A2)				A, and 4B)	S (D9) (C 2	KCEPI WILL	\A	4A, and 4B)
☐ Saturation				☐ Salt Crust	•				Drainage Patterns (B10)
	arks (B1)			Aquatic Inv	` ,	(B13)			☐ Dry-Season Water Table (C2)
_	t Deposits (B2)			☐ Hydrogen		. ,			☐ Saturation Visible on Aerial Imagery (C9)
	osits (B3)			Oxidized F			Living Roo	ts (C3)	Geomorphic Position (D2)
	t or Crust (B4)			☐ Presence of		_	_	10 (00)	☐ Shallow Aquitard (D3)
	osits (B5)			☐ Recent Iro		-	•	6)	FAC-Neutral Test (D5)
	Soil Cracks (B6)			☐ Stunted or			,	,	Raised Ant Mounds (D6) (LRR A)
	on Visible on Aerial	Imagery (B7)	☐ Other (Exp		•	,		☐ Frost-Heave Hummocks (D7)
☐ Sparsely	Vegetated Concav	e Surface	(B8)						
Field Obser	vations:								
Surface Wat	er Present?	Yes 🗌	No 🔀	Depth (inches	s):				
Water Table	Present?	Yes 🗌	No 🗵	Depth (inches	s):				
Saturation P		Yes 🗌	No 🗵	Depth (inches	s):		Wetl	and Hyd	drology Present? Yes ☐ No ☒
(includes ca	oillary fringe)					! !		i f ==i1=	ahla.
Describe Re	corded Data (strear	n gauge,	monitori	ng well, aerial	pnotos, pre	vious ins	spections),	ıı avalla	able:
D /									
Remarks:									
INO primary	or secondary l	nydrolog	jic indi	cators obse	rved.				
I									

Project/Site: 1042.0005 - Ravesdale		City/County	: Ravens	sdale/King	Sampling Date: 12/15/2017
Applicant/Owner: Ravensdale LLC				State: WA	Sampling Point: DP-27W
				ownship, Range: <u>01, 22</u> N	
Landform (hillslope, terrace, etc.): Valley Floor					
Subregion (LRR): A2	_ Lat: <u>47.</u>	3481072	810729	Long: -121.9823090	034352 Datum: WGS84
Soil Map Unit Name: Beausite gravelly sandy loam				NWI classification	tion: PEM
Are climatic / hydrologic conditions on the site typical for this	s time of yea	ar? Yes 🗌	No ເ (I	f no, explain in Remarks.)	
Are Vegetation, Soil, or Hydrology sign	nificantly dis	turbed?	Are "No	ormal Circumstances" pres	ent? Yes 🗵 No 🗌
Are Vegetation, Soil, or Hydrology natu	ırally probler	matic?	(If need	ed, explain any answers in	Remarks.)
SUMMARY OF FINDINGS - Attach site map	showing	samplin	g point l	ocations, transects,	important features, etc.
Hydrophytic Vegetation Present? Yes ☒ No ☐					
Hydric Soil Present? Yes ⊠ No □			e Sampled		- -
Wetland Hydrology Present? Yes ☒ No ☐		with	in a Wetlar	nd? Yes ☒ No	0 □
Remarks: All three wetland criteria observed. Acc	cumulated	d precipita	ation 115	% of normal for the 2	017/2018 water year
(Sea-Tac International Airport). Data c	ollected ir	n Wetland	d L.		
VEGETATION - Use scientific names of plan	ts.				
Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?		Dominance Test works	
1	70 OOVCI	No	Otatus	Number of Dominant Sp That Are OBL, FACW, o	
2				Total Number of Domina	
3				Species Across All Strata	a: <u>2</u> (B)
4	^	= Total C	over	Percent of Dominant Spo That Are OBL, FACW, o	
Sapling/Shrub Stratum (Plot size: 15 ft)		No		Prevalence Index work	sheet:
1 2				Total % Cover of:	
3.					x 1 = <u>0</u>
4.					x 2 = <u>90</u>
5					x 3 = <u>165</u>
	0	= Total C	over	· ·	x 4 = 0
Herb Stratum (Plot size: <u>5 ft)</u> 1. Glyceria elata	45	Yes	FACW	UPL species 0	x 5 = 0
2. Athyrium cyclosorum	55	Yes	FAC	Column Totals: 100	(A) <u>255</u> (B)
3				Prevalence Index	= B/A = <u>2.55</u>
4.				Hydrophytic Vegetation	n Indicators:
5				☐ Rapid Test for Hydro	phytic Vegetation
6				■ Dominance Test is >	50%
7				➤ Prevalence Index is	
8					tations¹ (Provide supporting or on a separate sheet)
9				☐ Wetland Non-Vascul	•
10				☐ Problematic Hydroph	nytic Vegetation¹ (Explain)
11	100	= Total C	over	¹ Indicators of hydric soil be present, unless distur	and wetland hydrology must
Woody Vine Stratum (Plot size: 30 ft)		No		bo process, armose arota.	
1		INO		Hydrophytic	
2	0	= Total C		Vegetation Present? Yes	i⊠ No □
% Bare Ground in Herb Stratum 0		- TOTAL C		. 1000111: 163	
Remarks: FAC-FACW species observed.	_				
,					

Sampling Point: DP-27

Depth	ription: (Describ Matrix	e to the d	aeptn ne		ment tne ox Feature		or confirm	the abs	sence of indicators.)
(inches)	Color (moist)	%	Colo	or (moist)	<u>%</u>		Loc ²	Texture	e Remarks
0 - 12	10YR 2/2	100						SaLo	 -
8 - 12	10YR 4/1	98	10	YR 4/4	2			Sand	
-					_				
					_				
	oncentration, D=De						ed Sand Gr		² Location: PL=Pore Lining, M=Matrix.
Hydric Soil	Indicators: (Appl	icable to	all LRR	s, unless othe	rwise not	ed.)		Inc	dicators for Problematic Hydric Soils ³ :
☐ Histosol	• •			Sandy Redox (S5)				2 cm Muck (A10)
	ipedon (A2)			Stripped Matrix	` '				Red Parent Material (TF2)
☐ Black His				Loamy Mucky N	•		MLRA 1)		. ,
	n Sulfide (A4)	(* 4 4)		Loamy Gleyed I)			Other (Explain in Remarks)
	Below Dark Surfa	ce (A11)		Depleted Matrix				31	aliantana af hardunula tina anntatina an d
	rk Surface (A12) lucky Mineral (S1)			Redox Dark Su Depleted Dark \$, ,	:7\		٩In	ndicators of hydrophytic vegetation and wetland hydrology must be present,
-	leyed Matrix (S4)			Redox Depress	•	7)			unless disturbed or problematic.
	Layer (if present):	1	·	redox Depress	10113 (1 0)			1	unicas disturbed of problematic.
Type:									
	ches):							Hydri	c Soil Present? Yes ⊠ No □
Remarks:								Hydri	C CONTRESENT: TES ES INC
	in diameter A.A	۸ .	-1 -50 -	la a a m sa al					
Hyaric soil	indicators A4,	ATT, an	a F3 0	bservea.					
HYDROLO	GY								
Wetland Hy	drology Indicators	s:							
Primary India	cators (minimum of	one requ	ired; che	eck all that appl	ly)				Secondary Indicators (2 or more required)
☐ Surface	Water (A1)			■ Water-Stail	ined Leav	es (B9) (e :	xcept MLR	RA	■ Water-Stained Leaves (B9) (MLRA 1, 2,
	ter Table (A2)			1, 2, 4	A, and 4B)			4A, and 4B)
★ Saturation	on (A3)			☐ Salt Crust	(B11)				☐ Drainage Patterns (B10)
☐ Water M	arks (B1)			☐ Aquatic Inv	vertebrate	s (B13)			☐ Dry-Season Water Table (C2)
☐ Sedimen	t Deposits (B2)			☐ Hydrogen	Sulfide O	dor (C1)			☐ Saturation Visible on Aerial Imagery (C9)
☐ Drift Dep	osits (B3)			☐ Oxidized F	Rhizosphe	res along	Living Root	ts (C3)	▼ Geomorphic Position (D2)
☐ Algal Ma	t or Crust (B4)			☐ Presence		_	_	. ,	☐ Shallow Aquitard (D3)
	osits (B5)			☐ Recent Iro			-)	➤ FAC-Neutral Test (D5)
-	Soil Cracks (B6)			☐ Stunted or	Stressed	Plants (D	1) (LRR A)		Raised Ant Mounds (D6) (LRR A)
☐ Inundation	on Visible on Aerial	Imagery	(B7)	☐ Other (Exp	olain in Re	marks)			☐ Frost-Heave Hummocks (D7)
☐ Sparsely	Vegetated Concav	ve Surfac	e (B8)						
Field Obser									
Surface Wat	er Present?	Yes 🗌	No 🗷	Depth (inches	s):				
Water Table	Present?	Yes 🗵	No 🗌	Depth (inches	-	<u>_</u>			
Saturation P		Yes 🗵	No 🗆	Depth (inches			Wetla	and Hvd	Irology Present? Yes ⊠ No □
(includes cap	oillary fringe)				<u> </u>				
	corded Data (strea	m gauge,	monitor	ing well, aerial	photos, p	revious ins	spections),	if availat	ole:
Remarks:									
Primary hy	drologic indica	tors A2	and A	3 observed.	Second	ary hydr	ologic ind	dicator	s B9, D2, and D5 observed.
	-					- •	-		

Attachment G – Wetland Rating Forms

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users Updated Oct. 2008 with the new WDFW definitions for priority habitats

Name of wetl	land (if known): Wetland A – 1042	2.0005: Rave	ensdale	Date of s	ite visit: <u>10/12</u>	/17
Rated by: Em	nily Swaim/Richard Peel	Trained by I	Ecology? Yes X No	Date of to	raining: <u>3/31/1</u>	16
SEC: 01	TWNSHP: 21N	RNGE: 0	6E Is S/T/R in Appe	ndix D?	Yes	No <u>X</u>
	Map of wetland unit: Fi	gure <u>1</u>	Estimated size 2.7	Acres		
		SUMMA	RY OF RATING			
Category bas	sed on FUNCTIONS provided by	y wetland:	П			
	Category I = Score > 70		Score for Water Quality Fund	tions	28	
	Category II = Score 51 - 69		Score for Hydrologic Fund	tions	12	
	Category III = Score 30 – 50		Score for Habitat Fund	tions	17	
	Category IV = Score < 30		TOTAL Score for Fund	tions	57	
Category bas	sed on SPECIAL CHARACTERIS	STCS of Wetl	land I II	Do	es not apply	
			se the "highest" category from a about the wetland unit.	bove")	III	
	Wetland Unit has Speci	al	Wetland HGM Class			
	Characteristics		used for Rating			
	Estuarine		Depressional	X		
	Natural Heritage Wetland	d	Riverine			
	Bog		Lake-fringe			
	Mature Forest		Slope			

Does the wetland being rated meet any of the criteria below? If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

X

Flats

Freshwater Tidal

Check if unit has multiple

HGM classes present

	Check List for Wetlands that Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1.	Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered animal or plant species (T/E species)? For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		X
SP2.	Has the wetland unit been documented as habitat for any State listed Threatened or Endangered animal species? For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category 1 Natural Heritage Wetlands (see p. 19 of data form).		X
SP3.	Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?		X
SP4.	Does the wetland unit have a local significance in addition to its functions? For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		X

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

Old Growth Forest

Coastal Lagoon Interdunal

None of the above

The hydrogeomorphic classification groups wetlands in to those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Classification of Vegetated Wetlands for Western Washington

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 (i.e. except during floods)? NO – go to 2 YES – the wetland class is Tidal Fringe If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)? YES – Freshwater Tidal Fringe NO – Saltwater Tidal Fringe (Estuarine) If your wetland can be classified as a Freshwater Tidal Fringe use the forms for Riverine wetlands. If it is a Saltwater Tidal Fringe it is rated as an Estuarine wetland. Wetlands that were call estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p).
2.	The entire wetland unit is flat and precipitation is 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 meet both of the following criteria? The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) where at least 20 acres (8ha) in size; At least 30% of the open water area is deeper than 6.6 (2 m)? NO - go to 4 YES - The wetland class is Lake-fringe (Lacustrine Fringe)
4.	Does the entire wetland 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? NOTE: Surface water does not pond in these types of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 foot deep). NO - go to 5 YES - The wetland class is Slope
5.	Does the entire wetland 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 two years. NOTE: The riverine unit can contain depressions that are filled with water when the river is not flooding NO - go to 6 YES - The wetland class is Riverine
6.	Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time of 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 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 your wetland. 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 class listed in column 2 is less

	HCM CL . II ' D .'
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	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of	Treat as ESTUARINE under wetlands with special
freshwater wetland	characteristics

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

than 10% of the unit, classify the wetland using the class that represents more than 90% of the total area.

D	Depressional and Flat Wetlands	Points
D	WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.	(only 1 score
		per box)
D 1	Does the wetland have the <u>potential</u> to improve water quality?	(see p.38)
	D 1.1 Characteristics of surface water flows out of the wetland: Unit is a depression with no surface water leaving it (no outlet)	Figure
	Unit has an intermittently flowing, OR highly constricted, permanently flowing outlet points = 2	3
	Unit has an unconstricted, or slightly constricted, surface outlet (permanently flowing) points = 1 Unit is a "flat" depression (Q.7 on key), or in the Flats class, with permanent surface	
	outflow and no obvious natural outlet and/or outlet is a man-made ditch points = 1	
	(If ditch is not permanently flowing treat unit as "intermittently flowing") Provide photo or drawing	
	D 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic (use NRCS definitions) YES points = 4 NO points = 0	4
	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class):	T.
	• Wetland has persistent, ungrazed vegetation > = 95% of area	Figure
	 Wetland has persistent, ungrazed vegetation > = 1/2 of area	3
	• Wetland has persistent, ungrazed vegetation < 1/10 of area	
	Map of Cowardin vegetation classes D 1.4 Characteristics of seasonal ponding or inundation: This is the area of the wetland that is ponded for at	
	least 2 months, but dries out sometime during the year. Do not count the area that is permanently	Figure 3
	ponded. Estimate area as the average condition 5 out of 10 years.	4
	 Area seasonally ponded is > 1/2 total area of wetland	
	· Area seasonally ponded is < 1/4 total area of wetland	
	Map of Hydroperiods	
	Total for D 1 Add the points in the boxes above	
D 2	Does the wetland have the <u>opportunity</u> to improve water quality?	(see p. 44)
	Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient	
	from the wetland? Note which of the following conditions provide the sources of pollutants. A unit	
	may have pollutants coming from several sources, but any single source would qualify as opportunity. Grazing in the wetland or within 150 ft	
	Untreated stormwater discharges to wetland	
	Tilled fields or orchards within 150 ft. of wetland A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed	
	fields, roads, or clear-cut logging	
	Residential, urban areas, golf courses are within 150 ft. of wetland	Multiplier
	Wetland is fed by groundwater high in phosphorus or nitrogen X Other Forest practices within 150 feet of wetland	2
	YES multiplier is 2 NO multiplier is 1	
u	TOTAL – Water Quality Functions Multiply the score from D1 by D2; then add score to table on p. 1	28
	HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation.	7
D 3	Does the wetland have the <u>potential</u> to reduce flooding and erosion?	(see p.46)
	D 3.1 Characteristics of surface water flows out of the wetland unit	
	 Unit is a depression with no surface water leaving it (no outlet)	
	Unit is a "flat" depression (Q.7 on key) or in the Flats class, with permanent surface	4
	outflow and no obvious natural outlet and/or outlet is a man-made ditch	
	• Unit has an unconstricted, or slightly constricted, surface outlet (permanently flowing) points = 0	
	D 3.2 Depth of storage during wet periods. Estimate the height of ponding above the bottom of the outlet. For	
	units with no outlet measure from the surface of permanent water or deepest part (if dry). Marks of ponding are 3 ft. or more above the surface or bottom of the outlet	
	• The wetland is a "headwater" wetland	3
	• Marks of ponding between 2 ft. to < 3 ft. from surface or bottom of outlet	3
	 Marks are at least 0.5 ft. to < 2 ft. from surface or bottom of outlet	
	· Marks of ponding less than 0.5 ft	
	D 3.3 Contribution of wetland unit 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 unit	_
	• The area of the basin is 10 to 100 times the area of the unit	5
	 The area of the basin is more than 100 times the area of the unit. Entire unit is in the FLATS class points = 5 	
ļ		<u></u>
	Total for D 3 Add the points in the boxes above	12

D 4	Does the wetland have the <u>opportunity</u> to reduce flooding and erosion? Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity,	(see p. 49)						
	it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide							
	gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. <i>Note which of the following</i>							
	indicators of opportunity apply. Wetland is in a headwater of a river or stream that has flooding problems. Wetland drains to a river or stream that has flooding problems							
	Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems							
	Other YES multiplier is 2 NO multiplier is 1							
u	TOTAL – Hydrologic Functions Multiply the score from D3 by D4; then add score to table on p. 1	12						

D 4: According to King County iMAP data, Wetland A is located within the Lower Cedar River drainage basin. If Wetland A contained an outlet, water would flow greater than 10 miles before flowing into the nearest *mapped* downgradient flood hazard area (associated with Cedar Creek to the north of Rock Creek Natural Area). During this ~ 10 miles, the surface flows through a number of ineffective culverts that limit free water movement.

While there are likely unmapped flood areas closer than 10 miles, if Wetland A contained an outlet, water flow would likely drain into either 1) Trench F which does not contain an outlet; 2) Wetland B which does not contain an outlet; or 3) Wetland F where surface flows are constricted by a culvert beneath a road just downgradient of the site. Further, the water would not flow directly into a stream with documented flood problems. In accordance with the WASHINGTON STATE WETLAND RATING SYSTEM for WESTERN WASHINGTON Annotated Version August 2006, Wetland A does not provide the opportunity to reduce flooding and erosion above a de minimis level.

The	se questi	ions apply to wetlands of all HGM classes.	Points
	HABIT	ΓΑΤ FUNCTIONS – Indicators that wetland functions to provide important habitat.	(only 1 scor per box)
H 1	Does t	he wetland have the <u>potential</u> to provide habitat for many species?	
	Н 1.1	Check the types of vegetation classes present (as defined by Cowardin) – Size threshold for each class is 1/4 acre or more than 10% of the area if unit is smaller than 2.5 acres. Aquatic Bed X Emergent plants X Scrub/shrub (areas where shrubs have > 30% cover) Forested (areas where trees have > 30% cover) If the unit has a forested class check if: 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. Add the number of vegetation types that qualify. If you have: 4 structures or morepoints = 4 Map of Cowardin vegetation classes 3 structures	Figure 1
	H 1.2	Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or 1/4 acre to count (see text for descriptions of hydroperiods). X Permanently flooded or inundated 4 or more types present points = 3 X Seasonally flooded or inundated 3 or more types present points = 2 Occasionally flooded or inundated 2 types present points = 1 Saturated only 1 type present points = 0 Permanently flowing stream or river in, or adjacent to, the wetland Seasonally flowing stream in, or adjacent to, the wetland Lake-fringe wetland 2 points	Figure 2
	H 1.3	Freshwater tidal wetland 2 points Map of hydroperiods Richness of Plant Species (see p. 75):	
	111.3	Count the number of plant species (see p. 95). 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) You do not have to name the species. Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle. If you counted: > 19 speciespoints = 2 5 - 19 speciespoints = 1 List species below if you want to: < 5 speciespoints = 0	2
	H 1.4	Interspersion of Habitats (see p. 76): Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.	
		None = 0 points Low = 1 point Moderate = 2 points Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always "high".	Figure
	(Use map of Cowardin classes. High = 3 points Friparian braided channels	•
	Н 1.5	Special Habitat Features (see p. 77): Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column. X Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft. long) X Standing snags (diameter at the bottom > 4 inches) in the wetland Undercut banks are present for at least 6.6 ft. (2m) and/or overhanging vegetation extends at least 3.3 ft. (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft. (10m) 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 (cut shrubs or trees that have not yet turned grey/brown) X At least 1/4 acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated (structures for egg-laying by amphibians)	4
		X Invasive plants cover less than 25% of the wetland area in each stratum of plants NOTE: The 20% stated in early printings of the manual on page 78 is an error.	

H 2 Does	the wetland have the opportunity to provide habitat for many species?	(only 1 score per box)
H 2.1	Buffers (see P. 80): Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed". 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% of circumference. No structures are within the undisturbed part of buffer (relatively undisturbed also means no grazing, no landscaping, no daily human use)	Figure
H 2.2	Corridors and Connections (see p. 81) H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft. wide, has at least a 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (Dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor). YES = 4 points (go to H 2.3) NO = go to H 2.2.2 H. 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50 ft. wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? OR a Lakefringe wetland, if it does not have an undisturbed corridor as in the question above? YES = 2 points (go to H 2.3) NO = go to H 2.2.3 H. 2.2.3 Is the wetland: Within 5 mi (8km) of a brackish or salt water estuary OR Within 3 miles of a large field or pasture (> 40 acres) OR WES = 1 point NO = 0 points	1

- H 2.1: The actively managed forestlands surrounding Wetland A do not meet the definition of "relatively undisturbed". Disturbance includes access roads, un-reclaimed coal strip mines, managed forest lands, dense populations of invasive vegetation (e.g., Himalayan blackberry and Scotch broom), recent grading actions associated with the partial fill of Trench F, et cetera.
- H 2.2: Wetland A is not part of a relatively undisturbed and unbroken vegetated corridor. The nearest brackish or saltwater estuary would be greater than 20 miles away. Wetland A is located within approximately 0.5-mile of Lake No. 12, which is greater than 20 acres in size and considered a Shoreline of the State.

u	Total Score for Habitat Functions Add the points for H 1 and H 2; then <i>record the result on p. 1</i>	17
	TOTAL for H 1 from page 8	10
	H 2 TOTAL Score – opportunity for providing habitat Add the scores from H2.1, H2.2, H2.3, H2.4	
		7
	 There is at least 1 wetland within 1/2 mile	
	within 1/2 mile points = 3 There is at least 1 watland within 1/2 mile points = 2	
	· The wetland fringe on a lake with disturbance and there are 3 other lake-fringe wetlands	
	disturbedpoints = 3	
	wetlands within 1/2 mile	3
	• The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe	
	but connections should NOT be bisected by paved roads, fill, fields, or other developmentpoints = 5	
	• There are at least 3 other wetlands within 1/2 mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating,	
	H 2.4 Wetland Landscape: Choose the one description of the landscape around the wetland that best fits (see p. 84)	
	addressed in question H 2.4)	
	If wetland has 1 priority habitat = 1 point No habitats = 0 points Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are	
	If wetland has 2 priority habitats = 3 points If welland has 1 priority habitats = 1 points No habitats = 0 points	
	If wetland has 3 or more priority habitats = 4 points	
	diameter at the largest end, and > 6 m (20 ft) long.	
	characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 51 cm (20 in) in western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30 cm (12 in) in	
	X Snags and Logs: Trees are considered snags if they are dead or dying and exhibit sufficient decay	
	andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.	
	Cliffs: Greater than 7.6 m (25 ft) high and occurring below 5000 ft. Talus: Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt,	
	rock, ice, or other geological formations and is large enough to contain a human.	
	Caves: A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils,	
	WDFW report: pp. 167-169 and glossary in Appendix A).	
	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	
	provide functional life history requirements for instream fish and wildlife resources.	
	Instream: The combination of physical, biological, and chemical processes and conditions that interact to	-
	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).	1
	terrestrial ecosystems which mutually influence each other.	
	Riparian: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and	
	oak component is important (full descriptions in WDFW PHS report p. 158).	
	generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest. Oregon white Oak: Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the	
	cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is	
	dbh or > 200 years of age. (Mature forests) Stands with average diameters exceeding 53 cm (21 in) dbh; crown	
	multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in)	
	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	
	fish and wildlife (full descriptions in WDFW PHS report p. 152).	
	Biodiversity Areas and Corridors: Areas of habitat that are relatively important to various species of native	
	NOTE: the connections do not have to be relatively undisturbed. Aspen Stands: Pure or mixed stands of aspen greater than 0.4 ha (1 acre).	
	Which of the following priority habitats are within 330 ft. (100m) of the wetland unit?	
	http://wdfw.wa.gov/hab/phslist.htm)	
	descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report	
	H 2.3 Near or adjacent to other priority habitats listed by WDFW (see p. 82): (see new and complete	

WETLAND RATING FORM - WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users Updated Oct. 2008 with the new WDFW definitions for priority habitats

Rated by: Trained by Ecology? Yes X No Date of training:3/31/16					
SEC: 01 TWNSHP: 21N RNGE: 06E Is S/T/R in Appendix D? Yes No _	X				
Map of wetland unit: Figure 1 Estimated size 0.6 Acres					
SUMMARY OF RATING					
Category based on FUNCTIONS provided by wetland: III					
Category I = Score > 70 Score for Water Quality Functions 12					
Category II = Score 51 - 69 Score for Hydrologic Functions 10					
Category III = Score 30 – 50 Score for Habitat Functions 17					
Category IV = Score < 30 TOTAL Score for Functions 39					
Category based on SPECIAL CHARACTERISTCS of Wetland I II Does not apply	•				
Final Category (choose the "highest" category from above")					
Summary of basic information about the wetland unit.					
Wetland Unit has Special Wetland HGM Class Characteristics used for Rating					
Estuarine Depressional X					
Natural Heritage Wetland Riverine					
Bog Lake-fringe					

Natural Heritage Wetland		Riverine	
Bog		Lake-fringe	
Mature Forest		Slope	
Old Growth Forest		Flats	
Coastal Lagoon		Freshwater Tidal	
Interdunal			
None of the above	X	Check if unit has multiple	

Does the wetland being rated meet any of the criteria below? If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.				
Check List for Wetlands that Need Additional Protection (in addition to the protection recommended for its category)			NO	
SP1.	Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered animal or plant species (T/E species)? For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		X	
SP2.	Has the wetland unit been documented as habitat for any State listed Threatened or Endangered animal species? For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category 1 Natural Heritage Wetlands (see p. 19 of data form).		X	
SP3.	Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?		X	
SP4.	Does the wetland unit have a local significance in addition to its functions? For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		X	

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

Wetland name or number – Wetland B
The hydrogeomorphic classification groups wetlands in to those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Classification of Vegetated Wetlands for Western Washington

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 (i.e. except during floods)? NO – go to 2 YES – the wetland class is Tidal Fringe If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)? YES – Freshwater Tidal Fringe NO – Saltwater Tidal Fringe (Estuarine) If your wetland can be classified as a Freshwater Tidal Fringe use the forms for Riverine wetlands. If it is a Saltwater Tidal Fringe it is rated as an Estuarine wetland. Wetlands that were call estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p).
2.	The entire wetland unit is flat and precipitation is 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 meet both of the following criteria? The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) where at least 20 acres (8ha) in size; At least 30% of the open water area is deeper than 6.6 (2 m)? NO - go to 4 YES - The wetland class is Lake-fringe (Lacustrine Fringe)
4.	Does the entire wetland 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? NOTE: Surface water does not pond in these types of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 foot deep). NO - go to 5 YES - The wetland class is Slope
5.	Does the entire wetland 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 two years. NOTE: The riverine unit can contain depressions that are filled with water when the river is not flooding NO - go to 6 YES - The wetland class is Riverine
6.	Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time of 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 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 your wetland. 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 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	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of	Treat as ESTUARINE under wetlands with special
freshwater wetland	characteristics

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

	Depressional and Flat Wetlands	Points
	WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.	(only 1 score
) 1	Does the wetland have the potential to improve water quality?	per box) $(see p.38)$
<i>,</i> 1	D 1.1 Characteristics of surface water flows out of the wetland:	(see p.50)
	Unit is a depression with no surface water leaving it (no outlet)	Figure
	Unit has an intermittently flowing, OR highly constricted, permanently flowing outlet points = 2	
	Unit has an unconstricted, or slightly constricted, surface outlet (permanently flowing) points = 1 Unit is a "flat" depression (Q.7 on key), or in the Flats class, with permanent surface	
	outflow and no obvious natural outlet and/or outlet is a man-made ditch	3
	(If ditch is not permanently flowing treat unit as "intermittently flowing") Provide photo or drawing	
	D 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic (use NRCS definitions)	0
	YES points = 4 NO points = 0 D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class):	
	• Wetland has persistent, ungrazed vegetation > = 95% of area	Figure
	Wetland has persistent, ungrazed vegetation > = 1/2 of area	3
	Wetland has persistent, ungrazed vegetation $> 1/10$ of area	3
	• Wetland has persistent, ungrazed vegetation < 1/10 of area	
	D 1.4 Characteristics of seasonal ponding or inundation: This is the area of the wetland that is ponded for at	
	least 2 months, but dries out sometime during the year. Do not count the area that is permanently	Figure 3
	ponded. Estimate area as the average condition 5 out of 10 years. Area seasonally ponded is > 1/2 total area of wetland	0
	· Area seasonally ponded is > 1/4 total area of wetland	
	• Area seasonally ponded is < 1/4 total area of wetland	
	Map of Hydroperiods	
	Total for D 1 Add the points in the boxes above	
2	Does the wetland have the opportunity to improve water quality?	(see p. 44)
	Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient	
	from the wetland? Note which of the following conditions provide the sources of pollutants. A unit	
	may have pollutants coming from several sources, but any single source would qualify as opportunity.	
	Grazing in the wetland or within 150 ft Untreated stormwater discharges to wetland	
	Tilled fields or orchards within 150 ft. of wetland	
	A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed	
	fields, roads, or clear-cut logging Residential, urban areas, golf courses are within 150 ft. of wetland	Multiplier
	Wetland is fed by groundwater high in phosphorus or nitrogen	2
	X Other Forest practices within 150 feet of wetland	
	YES multiplier is 2 NO multiplier is 1	
u	TOTAL - Water Quality Functions Multiply the score from D1 by D2; then add score to table on p. 1	12
	TOTAL – Water Quality Functions Multiply the score from D1 by D2; then <i>add score to table on p. 1</i> HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation.	1
	TOTAL – Water Quality Functions Multiply the score from D1 by D2; then add score to table on p. 1 HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation. Does the wetland have the potential to reduce flooding and erosion?	12 (see p.46)
	TOTAL – Water Quality Functions Multiply the score from D1 by D2; then add score to table on p. 1 HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation. Does the wetland have the potential to reduce flooding and erosion? D 3.1 Characteristics of surface water flows out of the wetland unit	(see p.46)
	TOTAL – Water Quality Functions Multiply the score from D1 by D2; then add score to table on p. 1 HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation. Does the wetland have the potential to reduce flooding and erosion? D 3.1 Characteristics of surface water flows out of the wetland unit - Unit is a depression with no surface water leaving it (no outlet)	(see p.46)
	TOTAL – Water Quality Functions Multiply the score from D1 by D2; then add score to table on p. 1 HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation. Does the wetland have the potential to reduce flooding and erosion? D 3.1 Characteristics of surface water flows out of the wetland unit - Unit is a depression with no surface water leaving it (no outlet)	(see p.46)
	TOTAL – Water Quality Functions Multiply the score from D1 by D2; then add score to table on p. 1 HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation. Does the wetland have the potential to reduce flooding and erosion? D 3.1 Characteristics of surface water flows out of the wetland unit - Unit is a depression with no surface water leaving it (no outlet)	(see p.46)
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	TOTAL – Water Quality Functions Multiply the score from D1 by D2; then add score to table on p. 1 HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation. Does the wetland have the potential to reduce flooding and erosion? D 3.1 Characteristics of surface water flows out of the wetland unit Unit is a depression with no surface water leaving it (no outlet)	(see p.46)
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	TOTAL – Water Quality Functions Multiply the score from D1 by D2; then add score to table on p. 1 HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation. Does the wetland have the potential to reduce flooding and erosion? D 3.1 Characteristics of surface water flows out of the wetland unit Unit is a depression with no surface water leaving it (no outlet)	(see p.46)
	TOTAL – Water Quality Functions Multiply the score from D1 by D2; then add score to table on p. 1 HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation. Does the wetland have the potential to reduce flooding and erosion? D 3.1 Characteristics of surface water flows out of the wetland unit Unit is a depression with no surface water leaving it (no outlet)	(see p.46)
	TOTAL – Water Quality Functions Multiply the score from D1 by D2; then add score to table on p. 1 HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation. Does the wetland have the potential to reduce flooding and erosion? D 3.1 Characteristics of surface water flows out of the wetland unit Unit is a depression with no surface water leaving it (no outlet)	(see p.46)
	TOTAL – Water Quality Functions Multiply the score from D1 by D2; then add score to table on p. 1 HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation. Does the wetland have the potential to reduce flooding and erosion? D 3.1 Characteristics of surface water flows out of the wetland unit Unit is a depression with no surface water leaving it (no outlet)	(see p.46)
03	HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation. Does the wetland have the potential to reduce flooding and erosion? D 3.1 Characteristics of surface water flows out of the wetland unit Unit is a depression with no surface water leaving it (no outlet)	(see p.46)
	HYDROLOGIC FUNCTIONS — Indicators that wetland unit functions to reduce flooding and stream degradation. Does the wetland have the potential to reduce flooding and erosion? D 3.1 Characteristics of surface water flows out of the wetland unit - Unit is a depression with no surface water leaving it (no outlet)	(see p.46)
	TOTAL – Water Quality Functions Multiply the score from D1 by D2; then add score to table on p. 1 HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation. Does the wetland have the potential to reduce flooding and erosion? D 3.1 Characteristics of surface water flows out of the wetland unit Unit is a depression with no surface water leaving it (no outlet) points = 4 Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2 Unit is a "flat" depression (Q.7 on key) or in the Flats class, with permanent surface outflow and no obvious natural outlet and/or outlet is a man-made ditch points = 1 (If ditch is not permanently flowing treat unit as "intermittently flowing") Unit has an unconstricted, or slightly constricted, surface outlet (permanently flowing) points = 0 D 3.2 Depth of storage during wet periods. Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry). Marks of ponding are 3 ft. or more above the surface or bottom of the outlet points = 7 The wetland is a "headwater" wetland points = 5 Marks of ponding between 2 ft. to < 3 ft. from surface or bottom of outlet points = 3 Wetland is flat (yes to Q.2 or Q.7 on key)but has small depressions on the surface that trap water points = 1 Marks of ponding less than 0.5 ft. points = 6 D 3.3 Contribution of wetland unit 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 unit points = 5	(see p.46) 4 3
	HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation. Does the wetland have the potential to reduce flooding and erosion? D 3.1 Characteristics of surface water flows out of the wetland unit - Unit is a depression with no surface water leaving it (no outlet)	(see p.46)
	TOTAL – Water Quality Functions Multiply the score from D1 by D2; then add score to table on p. 1 HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation. Does the wetland have the potential to reduce flooding and erosion? D 3.1 Characteristics of surface water flows out of the wetland unit Unit is a depression with no surface water leaving it (no outlet) points = 4 Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2 Unit is a "flat" depression (Q.7 on key) or in the Flats class, with permanent surface outflow and no obvious natural outlet and/or outlet is a man-made ditch points = 1 (If ditch is not permanently flowing treat unit as "intermittently flowing") Unit has an unconstricted, or slightly constricted, surface outlet (permanently flowing) points = 0 D 3.2 Depth of storage during wet periods. Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry). Marks of ponding are 3 ft. or more above the surface or bottom of the outlet points = 7 The wetland is a "headwater" wetland points = 5 Marks of ponding between 2 ft. to < 3 ft. from surface or bottom of outlet points = 3 Wetland is flat (yes to Q.2 or Q.7 on key)but has small depressions on the surface that trap water points = 1 Marks of ponding less than 0.5 ft. points = 6 D 3.3 Contribution of wetland unit 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 unit points = 5	(see p.46) 4 3

D 4	Does the wetland have the <u>opportunity</u> to reduce flooding and erosion? Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity,	(see p. 49)	
	it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from		
	groundwater in areas where damaging groundwater flooding does not occur. <i>Note which of the following indicators of opportunity apply.</i>		
	Wetland is in a headwater of a river or stream that has flooding problems. Wetland drains to a river or stream that has flooding problems Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems		
	Other YES multiplier is 2 NO multiplier is 1		
u	TOTAL – Hydrologic Functions Multiply the score from D3 by D4; then add score to table on p. 1	10	

D 4: According to King County iMAP data, Wetland B is located within the Lower Cedar River drainage basin. If Wetland B contained an outlet, water would flow greater than 10 miles before flowing into the nearest *mapped* downgradient flood hazard area (associated with Cedar Creek to the north of Rock Creek Natural Area). During this ~ 10 miles, the surface flows through a number of ineffective culverts that limit free water movement.

While there are likely unmapped flood areas closer than 10 miles, if Wetland B contained an outlet, water flow would likely drain into either 1) Trench F which does not contain an outlet; or 2) Wetland F where surface flows are constricted by a culvert beneath a road just downgradient of the site. Further, the water would not flow directly into a stream with documented flood problems. In accordance with the WASHINGTON STATE WETLAND RATING SYSTEM for WESTERN WASHINGTON Annotated Version August 2006, Wetland B does not provide the opportunity to reduce flooding and erosion above a de minimis level.

1100	se questi	ions apply to wetlands of all HGM classes.	Points
	НАВІТ	TAT FUNCTIONS – Indicators that wetland functions to provide important habitat.	(only 1 scor per box)
H 1	Does th	he wetland have the <u>potential</u> to provide habitat for many species?	
	H 1.1	Check the types of vegetation classes present (as defined by Cowardin) – Size threshold for each class is 1/4 acre or more than 10% of the area if unit is smaller than 2.5 acres. Aquatic Bed X Emergent plants X Scrub/shrub (areas where shrubs have > 30% cover) Forested (areas where trees have > 30% cover) If the unit has a forested class check if: 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. Add the number of vegetation types that qualify. If you have: 4 structures or morepoints = 4 Map of Cowardin vegetation classes 3 structures	Figure 1
	H 1.2	2 structurespoints = 1 Hydroperiods (see p.73): Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or 1/4 acre to count (see text for descriptions of hydroperiods). X Permanently flooded or inundated 4 or more types present points = 3 Seasonally flooded or inundated 3 or more types present points = 2 Occasionally flooded or inundated 2 types present points = 1 X Saturated only 1 type present points = 1 Permanently flowing stream or river in, or adjacent to, the wetland Seasonally flowing stream in, or adjacent to, the wetland Lake-fringe wetland	Figure 2
	H 1.3	Richness of Plant Species (see p. 75): 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) You do not have to name the species. Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle. If you counted: > 19 speciespoints = 2 5 - 19 speciespoints = 1 List species below if you want to: < 5 speciespoints = 0	2
	H 1.4	Interspersion of Habitats (see p. 76): Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none. Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is	Figure
	(None = 0 points Low = 1 point	
	H 1.5	High = 3 points Special Habitat Features (see p. 77): Check the habitat features that are present in the wetland. The number of checks is the number of points	
		you put into the next column. X Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft. long) X Standing snags (diameter at the bottom > 4 inches) in the wetland Undercut banks are present for at least 6.6 ft. (2m) and/or overhanging vegetation extends at least 3.3 ft. (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft. (10m) 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 (cut shrubs or trees that have not yet turned grey/brown) X At least 1/4 acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated (structures for egg-laying by amphibians) X Invasive plants cover less than 25% of the wetland area in each stratum of plants NOTE: The 20% stated in early printings of the manual on page 78 is an error.	4

H 2 Does	the wetland have the opportunity to provide habitat for many species?	(only 1 score per box)
H 2.1	Buffers (see P. 80): Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed". 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% of circumference. No structures are within the undisturbed part of buffer (relatively undisturbed also means no grazing, no landscaping, no daily human use). ———————————————————————————————————	Figure 2
H 2.2	Corridors and Connections (see p. 81) H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft. wide, has at least a 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (Dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor). YES = 4 points (go to H 2.3) NO = go to H 2.2.2 H. 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50 ft. wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? OR a Lakefringe wetland, if it does not have an undisturbed corridor as in the question above? YES = 2 points (go to H 2.3) NO = go to H 2.2.3 H. 2.2.3 Is the wetland: Within 5 mi (8km) of a brackish or salt water estuary OR Within 3 miles of a large field or pasture (> 40 acres) OR Within 1 mile of a lake greater than 20 acres? NO = 0 points	1

- H 2.1: The actively managed forestlands surrounding Wetland B do not meet the definition of "relatively undisturbed". Disturbance includes access roads, un-reclaimed coal strip mines, managed forest lands, dense populations of invasive vegetation (e.g., Himalayan blackberry and Scotch broom), recent grading actions associated with the partial fill of Trench F, et cetera.
- H 2.2: Wetland B is not part of a relatively undisturbed and unbroken vegetated corridor. The nearest brackish or saltwater estuary would be greater than 20 miles away. Wetland B is located within approximately 0.5-mile of Lake No. 12, which is greater than 20 acres in size and considered a Shoreline of the State.

u	Total Score for Habitat Functions Add the points for H 1 and H 2; then <i>record the result on p. 1</i>	17
	TOTAL for H 1 from page 8	10
	H 2 TOTAL Score – opportunity for providing habitat Add the scores from H2.1, H2.2, H2.3, H2.4	
	There are no wetlands within 1/2 mile points = 0	7
	• There is at least 1 wetland within 1/2 mile points = 2	
	within 1/2 milepoints = 3	
	• The wetland fringe on a lake with disturbance and there are 3 other lake-fringe wetlands	
	• There are at least 3 other wetlands within 1/2 mile, BUT the connections between them are disturbed	•
	wetlands within 1/2 mile	3
	The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe	
	relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development points = 5	
	There are at least 3 other wetlands within 1/2 mile, and the connections between them are	
	H 2.4 Wetland Landscape: Choose the one description of the landscape around the wetland that best fits (see p. 84)	
	Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4)	
	If wetland has 1 priority habitat = 1 point No habitats = 0 points Note: All vegeteted wetlands are by definition a priority habitet but are not included in this list. Nearby wetlands are	
	If wetland has 2 priority habitats = 3 points	
	end, and > 6 m (20 ft) long. If wetland has 3 or more priority habitats = 4 points	
	western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30 cm (12 in) in diameter at the largest	
	to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 51 cm (20 in) in	
	x Snags and Logs: Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics	
	Talus: Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.	
	Cliffs: Greater than 7.6 m (25 ft) high and occurring below 5000 ft.	
	rock, ice, or other geological formations and is large enough to contain a human.	
	WDFW report: pp. 167-169 and glossary in Appendix A). Caves: A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils,	
	and Puget Sound Nearshore. (full descriptions of habitats and the definition of relatively undisturbed are in	
	Nearshore: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore,	
	provide functional life history requirements for instream fish and wildlife resources.	
	a wet prairie (full descriptions in WDFW PHS report p. 161). Instream: The combination of physical, biological, and chemical processes and conditions that interact to	1
	Westside Prairies: Herbaceous, non-forested plant communities that can either take the form of a dry prairie or	
	terrestrial ecosystems which mutually influence each other.	
	oak component is important (full descriptions in WDFW PHS report p. 158). Riparian: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and	
	Oregon white Oak: Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the	
	generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest.	
	cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is	
	multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age. (Mature forests) Stands with average diameters exceeding 53 cm (21 in) dbh; crown	
	Old-growth/Mature forests: (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a	
	Herbaceous Balds: Variable size patches of grass and forbs on shallow soils over bedrock.	
	Biodiversity Areas and Corridors : Areas of habitat that are relatively important to various species of native fish and wildlife (<i>full descriptions in WDFW PHS report p. 152</i>).	
	Aspen Stands: Pure or mixed stands of aspen greater than 0.4 ha (1 acre).	
	NOTE: the connections do not have to be relatively undisturbed.	
	Which of the following priority habitats are within 330 ft. (100m) of the wetland unit?	
	http://wdfw.wa.gov/hab/phslist.htm)	
	H 2.3 Near or adjacent to other priority habitats listed by WDFW (see p. 82): (see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report	
	Tyron Name of the transfer of	

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

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

	Wetland Type – Check off any criteria that apply to the wetland. Circle the Category when the appropriate		
	criteria are met.		
SC1	Estuarine wetlands? (see p.86)		
	Does the wetland unit meet the following criteria for Estuarine wetlands?		
	The dominant water regime is tidal, Vegetated, and		
	With a salinity greater than 0.5 ppt.		
	YES = Go to SC 1.1 NO X		
	SC 1.1 Is the wetland unit 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? YES = Category I $NO = go to SC 1.2$	Cat. 1	
	SC 1.2 Is the wetland at least 1 acre in size and meets at least two of the following conditions?		
	$YES = Category I \qquad NO = Category II$	Cat. I	
	The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has		
	less than 10% cover of non-native plant species. If the non-native Spartina spp, are only species	Cat. II	
	that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/I). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh		
	with native species would be a Category 1. Do not, however, exclude the area of Spartina in		
	determining the size threshold of 1 acre.	Dual	
	At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland	Rating	
	The wetland has at least 2 of the following features: tidal channels, depressions with open water,	I/II	
	or contiguous freshwater wetlands.		
SC2	Natural Heritage Wetlands (see p. 87)		
502	Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as		
	either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or		
	Sensitive plant species.		
	SC 2.1 Is the wetland being rated in a Section/Township/Range that contains a natural heritage wetland? (This		
	question is used to screen out most sites before you need to contact WNHP/DNR.)		
	S/T/R information from Appendix D or accessed from WNHP/DNR web site		
	YES Contact WNHP/DNR (see p. 79) and go to SC 2.2 NO \underline{X}		
	SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as a site with state threatened		
	or endangered plant species?	Cat I	
	YES = Category 1 NO \underline{X} not a Heritage Wetland		
SC3	Bogs (see p. 87)		
	Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? Use		
	the key below to identify if the wetland is a bog. If you answer yes you will still need to rate the		
	wetland based on its function.		
	1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that		
	compose 16 inches or more of the first 32 inches of soil profile? (See Appendix B for a field key to identify organic soils)? YES = go to question 3 NO = go to question 2		
	2. Does the wetland have organic soils, either peats or mucks that are less than 16 inches deep over		
	bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or		
	pond? YES = go to question 3 NO = is not a bog for purpose of rating		
	3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present,		
	consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more		
	than 30% of the total shrub and herbaceous cover consists of species in Table 3)?		
	YES = Is a bog for purpose of rating NO = go to question 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" deep. If the pH is		
	less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog.		
	4. Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western		
	hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine. WITH any of		
	the species (or combination of species) on the bog species plant list in Table 3 as a significant		
	component of the ground cover (> 30% coverage of the total shrub/herbaceous cover)?	Cat. I	
	$\mathbf{YES} = \mathbf{Category} \ \mathbf{I} \qquad \qquad \mathbf{NO} = \mathbf{Is} \ \mathbf{not} \ \mathbf{a} \ \mathbf{bog} \ \mathbf{for} \ \mathbf{purpose} \ \mathbf{of} \ \mathbf{rating}$		

SC4	Forested Wetlands (see p. 90)			
	Does the wetland have at least 1 acre of forest that meet one of these criteria for the Department of Fish			
	and Wildlife's forests as priority habitats? If you answer yes you will still need to rate the wetland			
	based on its function.			
	Old-growth forests: (west of Cascade Crest) Stands of at least two three species forming a			
	multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare)			
	that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm or			
	more).			
	NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees			
	in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW			
	criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter.			
	Mature forests: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old			
	OR have an average diameters (dbh) exceeding 21 inches (53 cm); 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.	Cat. I		
	YES = Category I NO = \underline{X} not a forested wetland with special characteristics			
SC5	Wetlands in Coastal Lagoons (see p. 91)			
	Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?			
	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 surface water that is saline or brackish (> 0.5)			
	ppt) during most of the year in at least a portion of the lagoon (needs to be measured near the			
	bottom.)			
	YES = Go to SC 5.1 NO \underline{X} not a wetland in a coastal lagoon			
	SC 5.1 Does the wetland meet all of the following three conditions?			
	The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing) and has			
	less than 20% cover of invasive plant species (see list of invasive species on p. 74).			
	At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed			
	or un-mowed grassland.	Cat. I		
	The wetland is larger than 1/10 acre (4350 square ft.)	340.1		
	YES = Category I NO = Category II	Cat. II		
CCC	Interdunal Wetlands (see p. 93)	0444 11		
SC6	Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or			
	WBUO)?			
	YES = Go to SC 6.1 NO \underline{X} not an interdunal wetland for rating			
	If you answer yes you will still need to rate the wetland based on its functions.			
	In practical terms that means the following geographic areas:			
	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			
	SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is one acre or larger?			
	YES = Category II $\mathbf{NO} = \mathbf{go} \text{ to SC } 6.2$	Cat. II		
	SC 6.2 Is the wetland between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre?			
	YES = Category III	Cat. III		
	Category of wetland based on Special Characteristics			
u	Choose the "highest" rating if wetland falls into several categories, and record on p. 1.			
	If you answered NO for all types enter "Not Applicable" on p. 1			
	TA AA A			

WETLAND RATING FORM - WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users Updated Oct. 2008 with the new WDFW definitions for priority habitats

Name of we	etland (if known): Wetland C – 1042.0	005: Ravensdale	Date of	site visit: <u>10/13/17</u>
Rated by:	Tr	ained by Ecology? Yes X	No Date of	training: <u>3/31/16</u>
SEC: 01	TWNSHP: 21N	RNGE: 06E Is	S/T/R in Appendix D?	Yes No X_
	Map of wetland unit: Figu	re <u>1</u> Estin	nated size 0.02 Acres	
		SUMMARY OF RATING		
Category b	pased on FUNCTIONS provided by v	vetland: IV		
	Category I = Score > 70	Score for Wate	r Quality Functions	10
	Category II = Score 51 - 69	Score for Hy	drologic Functions	5
	Category III = Score 30 – 50	Score fo	r Habitat Functions	11
	Category IV = Score < 30	TOTAL	Score for Functions	26
Category b	ased on SPECIAL CHARACTERIST(CS of Wetland Does not	apply	<u> </u>
	Final Catego	ry (choose the "highest" ca	tegory from above")	IV
	Summary of basic info	ormation about the wetland	d unit.	
	Wetland Unit has Special	Wetland H		
	Characteristics	used for		4
	Estuarine Natural Haritage Wetland	Depressional Rivering	X	+

Wetland Unit has Special		V
Characteristics		
Estuarine		Depr
Natural Heritage Wetland		Rive
Bog		Lake
Mature Forest		Slope
Old Growth Forest		Flats
Coastal Lagoon		Fresl
Interdunal		
None of the above	X	Chec

Wetland HGM Class used for Rating	
Depressional	X
Riverine	
Lake-fringe	
Slope	
Flats	
Freshwater Tidal	
Check if unit has multiple HGM classes present	

Does the wetland being rated meet any of the criteria below? If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

	Check List for Wetlands that Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1.	Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered animal or plant species (T/E species)? For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		X
SP2.	Has the wetland unit been documented as habitat for any State listed Threatened or Endangered animal species? For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category 1 Natural Heritage Wetlands (see p. 19 of data form).		X
SP3.	Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?		X
SP4.	Does the wetland unit have a local significance in addition to its functions? For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		X

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

Wetland name or number – Wetland C
The hydrogeomorphic classification groups wetlands in to those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Classification of Vegetated Wetlands for Western Washington

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 (i.e. except during floods)? NO – go to 2 YES – the wetland class is Tidal Fringe
	If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)? YES – Freshwater Tidal Fringe NO – Saltwater Tidal Fringe (Estuarine)
	If your wetland can be classified as a Freshwater Tidal Fringe use the forms for Riverine wetlands. If it is a Saltwater Tidal Fringe it is rated as an Estuarine wetland. Wetlands that were call estuarine in the first and second editions of the rating system are called Salt
	Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p).
2.	The entire wetland unit is flat and precipitation is 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 meet both of the following criteria?
э.	The vegetated part of the wetland is on the shores of a body of permanent open water (without any
	vegetation on the surface) where at least 20 acres (8ha) in size; At least 30% of the open water area is deeper than 6.6 (2 m)?
	NO – go to 4 YES – The wetland class is Lake-fringe (Lacustrine Fringe)
4.	Does the entire wetland meet all of the following criteria?
	x The wetland is on a slope (slope can be very gradual).
	x 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.
	x The water leaves the wetland without being impounded?
	NOTE: Surface water does not pond in these types of wetlands except occasionally in very small and
	shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 foot deep). NO – go to 5 YES – The wetland class is Slope
5.	Does the entire wetland 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 two years.
	NOTE: The riverine unit can contain depressions that are filled with water when the river is not flooding NO – go to 6 YES – The wetland class is Riverine
6.	Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time of
	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 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 your wetland. 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 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.
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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	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of	Treat as ESTUARINE under wetlands with special
freshwater wetland	characteristics

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

D	Depressional and Flat Wetlands	Points
	WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.	(only 1 score
D 1	Does the wetland have the <u>potential</u> to improve water quality?	per box) (see p.38)
D I	D 1.1 Characteristics of surface water flows out of the wetland:	
	• Unit is a depression with no surface water leaving it (no outlet)	Figure
	Unit has an intermittently flowing, OR highly constricted, permanently flowing outlet points = 2 Unit has an unconstricted, or slightly constricted, surface outlet (permanently flowing) points = 1	
	Unit is a "flat" depression (Q.7 on key), or in the Flats class, with permanent surface	2
	outflow and no obvious natural outlet and/or outlet is a man-made ditch	
	D 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic (use NRCS definitions)	0
	YES points = 4 NO points = 0	U
	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class): Wetland has persistent, ungrazed vegetation > = 95% of area	Figure
	• Wetland has persistent, ungrazed vegetation > = 1/2 of area	3
	 Wetland has persistent, ungrazed vegetation > = 1/10 of area	3
	Map of Cowardin vegetation classes	
	D 1.4 Characteristics of seasonal ponding or inundation: This is the area of the wetland that is ponded for at	Figure 3
	least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 years.	
	Area seasonally ponded is > 1/2 total area of wetland	0
	 Area seasonally ponded is > 1/4 total area of wetland	
	Map of Hydroperiods	
	Total for D 1 Add the points in the boxes above	5
D 2	Does the wetland have the opportunity to improve water quality?	(see p. 44)
	Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient	
	from the wetland? Note which of the following conditions provide the sources of pollutants. A unit	
	may have pollutants coming from several sources, but any single source would qualify as opportunity. Grazing in the wetland or within 150 ft	
	Untreated stormwater discharges to wetland	
	Tilled fields or orchards within 150 ft. of wetland	
	A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging	
	Residential, urban areas, golf courses are within 150 ft. of wetland	Multiplier
	Wetland is fed by groundwater high in phosphorus or nitrogen X Other Forest practices within 150 feet of wetland	<u>2</u>
	YES multiplier is 2 NO multiplier is 1	
u	TOTAL – Water Quality Functions Multiply the score from D1 by D2; then add score to table on p. 1	10
	HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation.	1
D 3	Does the wetland have the <u>potential</u> to reduce flooding and erosion?	(see p.46)
	D 3.1 Characteristics of surface water flows out of the wetland unit	
	 Unit is a depression with no surface water leaving it (no outlet)	
	Unit is a "flat" depression (Q.7 on key) or in the Flats class, with permanent surface	2
	outflow and no obvious natural outlet and/or outlet is a man-made ditch	
	• Unit has an unconstricted, or slightly constricted, surface outlet (permanently flowing) points = 0	
	 Unit has an unconstricted, or slightly constricted, surface outlet (permanently flowing) points = 0 D 3.2 Depth of storage during wet periods. Estimate the height of ponding above the bottom of the outlet. For 	
	• Unit has an unconstricted, or slightly constricted, surface outlet (permanently flowing) points = 0	
	 Unit has an unconstricted, or slightly constricted, surface outlet (permanently flowing) points = 0 D 3.2 Depth of storage during wet periods. Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry). Marks of ponding are 3 ft. or more above the surface or bottom of the outlet	0
	 Unit has an unconstricted, or slightly constricted, surface outlet (permanently flowing) points = 0 D 3.2 Depth of storage during wet periods. Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry). Marks of ponding are 3 ft. or more above the surface or bottom of the outlet	0
	 Unit has an unconstricted, or slightly constricted, surface outlet (permanently flowing) points = 0 D 3.2 Depth of storage during wet periods. Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry). Marks of ponding are 3 ft. or more above the surface or bottom of the outlet points = 7 The wetland is a "headwater" wetland points = 5 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 Wetland is flat (yes to Q.2 or Q.7 on key)but has small depressions on the surface that trap water points = 1 	0
	 Unit has an unconstricted, or slightly constricted, surface outlet (permanently flowing) points = 0 D 3.2 Depth of storage during wet periods. Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry). Marks of ponding are 3 ft. or more above the surface or bottom of the outlet points = 7 The wetland is a "headwater" wetland points = 5 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 Wetland is flat (yes to Q.2 or Q.7 on key)but has small depressions on the surface that trap water points = 1 Marks of ponding less than 0.5 ft points = 0 	0
	 Unit has an unconstricted, or slightly constricted, surface outlet (permanently flowing) points = 0 D 3.2 Depth of storage during wet periods. Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry). Marks of ponding are 3 ft. or more above the surface or bottom of the outlet	0
	 Unit has an unconstricted, or slightly constricted, surface outlet (permanently flowing) points = 0 D 3.2 Depth of storage during wet periods. Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry). Marks of ponding are 3 ft. or more above the surface or bottom of the outlet	
	Unit has an unconstricted, or slightly constricted, surface outlet (permanently flowing) points = 0 D 3.2 Depth of storage during wet periods. Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry). Marks of ponding are 3 ft. or more above the surface or bottom of the outlet points = 7 The wetland is a "headwater" wetland points = 5 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 Wetland is flat (yes to Q.2 or Q.7 on key)but has small depressions on the surface that trap water points = 1 Marks of ponding less than 0.5 ft points = 0 D 3.3 Contribution of wetland unit 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 unit points = 5 The area of the basin is 10 to 100 times the area of the unit points = 3	0
	 Unit has an unconstricted, or slightly constricted, surface outlet (permanently flowing) points = 0 D 3.2 Depth of storage during wet periods. Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry). Marks of ponding are 3 ft. or more above the surface or bottom of the outlet	3

D 4	Does the wetland have the <u>opportunity</u> to reduce flooding and erosion? Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. <i>Note which of the following</i>	(see p. 49)
	indicators of opportunity apply. Wetland is in a headwater of a river or stream that has flooding problems. Wetland drains to a river or stream that has flooding problems Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems Other YES multiplier is 2 NO multiplier is 1	Multiplier 1
- -	TOTAL – Hydrologic Functions Multiply the score from D3 by D4; then add score to table on p. 1	5

D 4: Wetland C exhibits saturations only; no seasonal or permanent flooding or ponding has been observed.

Thes	re questions apply to wetlands of all HGM classes.	Points
	HABITAT FUNCTIONS - Indicators that wetland functions to provide important habitat.	(only 1 scor per box)
H 1	Does the wetland have the <u>potential</u> to provide habitat for many species?	. /
	H 1.1 Vegetation structure (see P. 72): Check the types of vegetation classes present (as defined by Cowardin) – Size threshold for each class 1/4 acre or more than 10% of the area if unit is smaller than 2.5 acres. Aquatic Bed X Emergent plants X Scrub/shrub (areas where shrubs have > 30% cover) Forested (areas where trees have > 30% cover) If the unit has a forested class check if: 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. Add the number of vegetation types that qualify. If you have: 4 structures or morepoints = 4 Map of Cowardin vegetation classes 3 structures	1 S S 2
	H 1.2 Hydroperiods (see p.73): Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or 1/4 acre to count (see text for descriptions of hydroperiods). Permanently flooded or inundated 4 or more types present points = 3 Seasonally flooded or inundated 3 or more types present points = 2 Occasionally flooded or inundated 2 types present points = 1 X Saturated only 1 type present points = 0 Permanently flowing stream or river in, or adjacent to, the wetland Seasonally flowing stream in, or adjacent to, the wetland Lake-fringe wetland	Figure 2
	Freshwater tidal wetland= 2 points Map of hydroperiod	s
	H 1.3 Richness of Plant Species (see p. 75): Count the number of plant species in the wetland that cover at least 10 ft² (different patches of the sam species can be combined to meet the size threshold) You do not have to name the species. Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle. If you counted: > 19 speciespoints = 2 5 - 19 speciespoints = 1 List species below if you want to: < 5 speciespoints = 0	1
	H 1.4 Interspersion of Habitats (see p. 76): Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), of the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.	
	Note: If you have 4 or more class or 3 vegetation classes and open water, the rating is always "high".	Figure
	Use map of Cowardin class [riparian braided channels]	es.
	H 1.5 Special Habitat Features (see p. 77): Check the habitat features that are present in the wetland. The number of checks is the number of point you put into the next column. X Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft. long) Standing snags (diameter at the bottom > 4 inches) in the wetland Undercut banks are present for at least 6.6 ft. (2m) and/or overhanging vegetation extends at least 3.3 ft. (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft. (10m) 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 (cut shrubs or trees that have not yet turned grey/brown) At least 1/4 acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated (structures for egg-laying by amphibians) Invasive plants cover less than 25% of the wetland area in each stratum of plants	
	NOTE: The 20% stated in early printings of the manual on page 78 is an error.	
	H 1 TOTAL Score – potential for providing habitat Add the points in the column above	e 4

H 2 Does	the wetland have the opportunity to provide habitat for many species?	(only 1 score per box)
H 2.1	Buffers (see P. 80): Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed". 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% of circumference. No structures are within the undisturbed part of buffer (relatively undisturbed also means no grazing, no landscaping, no daily human use). ———————————————————————————————————	Figure 2
H 2.2	Corridors and Connections (see p. 81) H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft. wide, has at least a 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (Dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor). YES = 4 points (go to H 2.3) NO = go to H 2.2.2 H. 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50 ft. wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? OR a Lakefringe wetland, if it does not have an undisturbed corridor as in the question above? YES = 2 points (go to H 2.3) NO = go to H 2.2.3 H. 2.2.3 Is the wetland: Within 5 mi (8km) of a brackish or salt water estuary OR Within 3 miles of a large field or pasture (> 40 acres) OR Within 1 mile of a lake greater than 20 acres? NO = 0 points	1

- H 2.1: The actively managed forestlands surrounding Wetland C do not meet the definition of "relatively undisturbed". Disturbance includes access roads, un-reclaimed coal strip mines, managed forest lands, dense populations of invasive vegetation (e.g., Himalayan blackberry and Scotch broom), recent grading actions associated with the partial fill of Trench E, et cetera.
- H 2.2: Wetland C is not part of a relatively undisturbed and unbroken vegetated corridor. The nearest brackish or saltwater estuary would be greater than 20 miles away. Wetland C is located within approximately 0.7-mile of Lake No. 12, which is greater than 20 acres in size and considered a Shoreline of the State.

u	Total Score for Habitat Functions Add the points for H 1 and H 2; then <i>record the result on p. 1</i>	11
	TOTAL for H 1 from page 8	4
	H 2 TOTAL Score – opportunity for providing habitat Add the scores from H2.1, H2.2, H2.3, H2.4	7
	There are no wetlands within 1/2 mile points = 0	
	There is at least 1 wetland within 1/2 mile points = 2	
	within 1/2 mile points = 3	
	• The wetland fringe on a lake with disturbance and there are 3 other lake-fringe wetlands	
	disturbedpoints = 3	
	wetlands within 1/2 mile	3
	The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe	
	but connections should NOT be bisected by paved roads, fill, fields, or other development points = 5	
	• There are at least 3 other wetlands within 1/2 mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating,	
	H 2.4 Wetland Landscape: Choose the one description of the landscape around the wetland that best fits (see p. 84)	
	Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4)	
	If wetland has 1 priority habitat = 1 point No habitats = 0 points Note: All vegetated wetlands are by definition a priority habitet but are not included in this list. Nearby wetlands are	
	If wetland has 2 priority habitats = 3 points	
	end, and > 6 m (20 ft) long. If wetland has 3 or more priority habitats = 4 points	
	western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30 cm (12 in) in diameter at the largest	
	to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 51 cm (20 in) in	
	andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs. X Snags and Logs: Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics	
	Talus: Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt,	
	Cliffs: Greater than 7.6 m (25 ft) high and occurring below 5000 ft.	
	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.	
	WDFW report: pp. 167-169 and glossary in Appendix A).	
	and Puget Sound Nearshore. (full descriptions of habitats and the definition of relatively undisturbed are in	
	provide functional life history requirements for instream fish and wildlife resources. Nearshore: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore,	
	Instream: The combination of physical, biological, and chemical processes and conditions that interact to	
	a wet prairie (full descriptions in WDFW PHS report p. 161).	1
	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	
	Riparian : The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and	
	oak component is important (full descriptions in WDFW PHS report p. 158).	
	generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest. Oregon white Oak: Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the	
	cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is	
	dbh or > 200 years of age. (Mature forests) Stands with average diameters exceeding 53 cm (21 in) dbh; crown	
	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 20 trees/ha (8 trees/acre) > 81 cm (32 in)	
	Herbaceous Balds: Variable size patches of grass and forbs on shallow soils over bedrock.	
	fish and wildlife (full descriptions in WDFW PHS report p. 152).	
	Aspen Stands: Pure or mixed stands of aspen greater than 0.4 ha (1 acre) Biodiversity Areas and Corridors: Areas of habitat that are relatively important to various species of native	
	NOTE: the connections do not have to be relatively undisturbed.	
	Which of the following priority habitats are within 330 ft. (100m) of the wetland unit?	
	descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report http://wdfw.wa.gov/hab/phslist.htm)	
	H 2.3 Near or adjacent to other priority habitats listed by WDFW (see p. 82): (see new and complete	

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

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

	Wetland Type – Check off any criteria that apply to the wetland. Circle the Category when the appropriate						
	criteria are met. Estuarina watlanda? (cae n 86)						
SC1	Estuarine wetlands? (see p.86)						
	Does the wetland unit meet the following criteria for Estuarine wetlands?						
	The dominant water regime is tidal, Vegetated, and						
	Vegetated, and With a salinity greater than 0.5 ppt.						
-	YES = Go to SC 1.1						
	SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural	G 4 1					
	Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? YES = Category I NO = go to SC 1.2	Cat. 1					
	SC 1.2 Is the wetland at least 1 acre in size and meets at least two of the following conditions?						
	YES = Category I NO = Category II The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has	Cat. I					
	less than 10% cover of non-native plant species. If the non-native <i>Spartina</i> spp, are only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh	Cat. II					
	with native species would be a Category 1. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre.	Dual					
	At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland The wetland has at least 2 of the following features: tidal channels, depressions with open weter	Rating I/II					
	The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.						
SC2	Natural Heritage Wetlands (see p. 87)						
SCZ	Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as						
	either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or						
	Sensitive plant species.						
	Sensitive plant species. SC 2.1 Is the wetland being rated in a Section/Township/Range that contains a natural heritage wetland? (<i>This</i>						
	question is used to screen out most sites before you need to contact WNHP/DNR.)						
	S/T/R information from Appendix D or accessed from WNHP/DNR web site						
	YES Contact WNHP/DNR (see p. 79) and go to SC 2.2 NO \overline{X}						
	SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as a site with state threatened						
	or endangered plant species?	Cat I					
	YES = Category 1 NO \underline{X} not a Heritage Wetland	Cat I					
	· · · · · · · · · · · · · · · · · · ·						
SC3	Bogs (see p. 87) Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? Use						
	the key below to identify if the wetland is a bog. If you answer yes you will still need to rate the						
	wetland based on its function.						
	1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that						
	compose 16 inches or more of the first 32 inches of soil profile? (See Appendix B for a field key to identify organic soils)? YES = go to question 3 NO = go to question 2						
	2. Does the wetland have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or						
	pond? YES = go to question 3 NO = is not a bog for purpose of rating						
	3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present,						
	consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more						
	than 30% of the total shrub and herbaceous cover consists of species in Table 3)?						
	YES = Is a bog for purpose of rating NO = go to question 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" deep. If the pH is						
	less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog.						
	4. Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western						
	hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine. WITH any of						
	the species (or combination of species) on the bog species plant list in Table 3 as a significant						
	component of the ground cover (> 30% coverage of the total shrub/herbaceous cover)?	C-4 T					
	YES = Category I NO = Is not a bog for purpose of rating	Cat. I					
	1E3 – Category 1 NO – is not a bog for purpose of fatting						

SC4	4 Forested Wetlands (see p. 90)					
	Does the wetland have at least 1 acre of forest that meet one of these criteria for the Department of Fish					
	and Wildlife's forests as priority habitats? If you answer yes you will still need to rate the wetland					
	based on its function.					
	Old-growth forests: (west of Cascade Crest) Stands of at least two three species forming a					
	multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare)					
	that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm or					
	more).					
	NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees					
	in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW					
	criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter.					
	Mature forests: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old					
	OR have an average diameters (dbh) exceeding 21 inches (53 cm); 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.	Cat. I				
	YES = Category I NO = \underline{X} not a forested wetland with special characteristics					
SC5	Wetlands in Coastal Lagoons (see p. 91)					
	Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?					
	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 surface water that is saline or brackish (> 0.5)					
	ppt) during most of the year in at least a portion of the lagoon (needs to be measured near the					
	bottom.)					
	YES = Go to SC 5.1 NO \underline{X} not a wetland in a coastal lagoon					
	SC 5.1 Does the wetland meet all of the following three conditions?					
	The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing) and has					
	less than 20% cover of invasive plant species (see list of invasive species on p. 74).					
	At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed					
	or un-mowed grassland.	Cat. I				
	The wetland is larger than 1/10 acre (4350 square ft.)					
	YES = Category I NO = Category II	Cat. II				
SC6	<u>Interdunal Wetlands</u> (see p. 93)					
	Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or					
	WBUO)?					
	YES = Go to SC 6.1 NO \underline{X} not an interdunal wetland for rating					
	If you answer yes you will still need to rate the wetland based on its functions.					
	In practical terms that means the following geographic areas:					
	Long Beach Peninsula lands west of SR 103 Grayland Westport - lands west of SP 105					
	 Grayland-Westport lands west of SR 105 Ocean Shores-Copalis – lands west of SR 115 and SR 109 					
	SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is one acre or larger?					
	YES = Category II $\mathbf{NO} = \mathbf{go} \text{ to SC } 6.2$	Cat. II				
	SC 6.2 Is the wetland between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre?	Cat. II				
	YES = Category III	Cat. III				
	Category of wetland based on Special Characteristics					
u	Choose the "highest" rating if wetland falls into several categories, and record on p. 1.					
	If you answered NO for all types enter "Not Applicable" on p. 1					

WETLAND RATING FORM - WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users Updated Oct. 2008 with the new WDFW definitions for priority habitats

Rated by: Emily Swaim/Richard Peel Trained by Ecology? Yes X No Date of training: 3/31/16 SEC: 01 TWNSHP: 21N RNGE: 06E Is S/T/R in Appendix D? Yes No X Map of wetland unit: Figure 1 Estimated size 169 Sq. Ft. SUMMARY OF RATING Category based on FUNCTIONS provided by wetland: IV Category II = Score > 70 Category II = Score 51 - 69 Category III = Score 51 - 69 Category III = Score 30 - 50 Category IV = Score < 30 TOTAL Score for Functions TOTAL Score for Functions Summary of basic information about the wetland unit. Wetland Unit has Special Wetland HGM Class	Name of wetland (if known): W	Vetland D – 1042.0005:	Ravensdale	D	ate of si	ite visit: <u>10/13/1</u>	.7
Map of wetland unit: Figure 1 Estimated size 169 Sq. Ft. SUMMARY OF RATING Category based on FUNCTIONS provided by wetland: IV Category I = Score > 70 Score for Water Quality Functions 4 Score for Hydrologic Functions 3 Score for Hydrologic Functions 8 Category III = Score 30 - 50 Score for Habitat Functions 15 Category IV = Score < 30 TOTAL Score for Functions 15 Category based on SPECIAL CHARACTERISTCS of Wetland Does not apply Final Category (choose the "highest" category from above") Summary of basic information about the wetland unit.	Rated by: Emily Swaim/Richard	d Peel Trained	by Ecology? Yes	<u>X</u> No D	ate of tr	aining: <u>3/31/16</u>	
SUMMARY OF RATING Category based on FUNCTIONS provided by wetland: IV Category I = Score > 70 Category II = Score 51 - 69 Category III = Score 50 - 50 Category IV = Score < 30 Category IV = Score < 30 Category based on SPECIAL CHARACTERISTCS of Wetland Does not apply Final Category (choose the "highest" category from above") Summary of basic information about the wetland unit.	SEC: 01 TWNS	HP: 21N RNC	GE: 06E	Is S/T/R in Appen	dix D?	Yes	No X
Category based on FUNCTIONS provided by wetland: IV Category I = Score > 70	Map o	of wetland unit: Figure	1	Estimated size 16	9 Sq. Ft	<u>.</u>	
Category I = Score > 70 Category II = Score 51 - 69 Category III = Score 30 - 50 Category IV = Score < 30 Category IV = Score < 30 Category based on SPECIAL CHARACTERISTCS of Wetland Final Category (choose the "highest" category from above") Summary of basic information about the wetland unit.		SUM	MARY OF RATI	NG			
Category II = Score 51 - 69 Category III = Score 30 - 50 Category IV = Score < 30 Category IV = Score < 30 Category based on SPECIAL CHARACTERISTCS of Wetland Does not apply Final Category (choose the "highest" category from above") Summary of basic information about the wetland unit.	Category based on FUNCTIO	ONS provided by wetlar	nd: IV				
Category III = Score 30 - 50 Category IV = Score < 30 Category IV = Score < 30 TOTAL Score for Functions Total Score for Functions Total Score for Functions IV Summary of basic information about the wetland unit.	Category I = S	Score > 70	Score for W	ater Quality Funct	ions	4	
Category IV = Score < 30 TOTAL Score for Functions 15 Category based on SPECIAL CHARACTERISTCS of Wetland Does not apply Final Category (choose the "highest" category from above") Summary of basic information about the wetland unit.	Category II = S	Score 51 - 69	Score for	Hydrologic Funct	ions	3	
Category based on SPECIAL CHARACTERISTCS of Wetland Does not apply Final Category (choose the "highest" category from above") Summary of basic information about the wetland unit.	Category III = S	Score 30 – 50	Score	for Habitat Funct	ions	8	
Final Category (choose the "highest" category from above") Summary of basic information about the wetland unit.	Category IV = S	Score < 30	TOTA	L Score for Funct	ions	15	
Summary of basic information about the wetland unit.	Category based on SPECIAL C	CHARACTERISTCS of	Wetland Does	not apply			
]	Final Category (d	choose the "highest"	category from abo	ove")	IV	
Wetland Unit has Special Wetland HGM Class	Sum	mary of basic informat	tion about the wetl	and unit.			
•							
Characteristics used for Rating Estuacional V		aracteristics			v		
Estuarine Depressional X Natural Heritage Wetland Riverine		eritage Wetland		11	A		

<u> </u>			
Wetland Unit has Special		Wetland HGM Class	
_		J. for Doding	
Characteristics		used for Rating	
Estuarine		Depressional	X
Natural Heritage Wetland		Riverine	
Bog		Lake-fringe	
Mature Forest		Slope	
Old Growth Forest		Flats	
Coastal Lagoon		Freshwater Tidal	
Interdunal			
None of the above	X	Check if unit has multiple HGM classes present	
		HOW Classes present	

Does the wetland being rated meet any of the criteria below? If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

	Check List for Wetlands that Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1.	Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered animal or plant species (T/E species)? For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		X
SP2.	Has the wetland unit been documented as habitat for any State listed Threatened or Endangered animal species? For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category 1 Natural Heritage Wetlands (see p. 19 of data form).		X
SP3.	Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?		X
SP4.	Does the wetland unit have a local significance in addition to its functions? For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		X

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands in to those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Classification of Vegetated Wetlands for Western Washington

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 (i.e. except during floods)? NO – go to 2 YES – the wetland class is Tidal Fringe
	If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?
	YES – Freshwater Tidal Fringe NO – Saltwater Tidal Fringe (Estuarine) If your wetland can be classified as a Freshwater Tidal Fringe use the forms for Riverine wetlands. If it is a Saltwater Tidal Fringe it
	is rated as an Estuarine wetland. Wetlands that were call estuarine in the first and second editions of the rating system are called Salt
	Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and
	this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please
	note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p).
2.	The entire wetland unit is flat and precipitation is 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 meet both of the following criteria?
•	The vegetated part of the wetland is on the shores of a body of permanent open water (without any
	vegetation on the surface) where at least 20 acres (8ha) in size;
	At least 30% of the open water area is deeper than 6.6 (2 m)?
	NO – go to 4 YES – The wetland class is Lake-fringe (Lacustrine Fringe)
4.	Does the entire wetland 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?
	NOTE: Surface water does not pond in these types of wetlands except occasionally in very small and
	shallow depressions or behind hummocks (depressions are usually < 3 ft diameter and less than 1 foot deep).
	NO – go to 5 YES – The wetland class is Slope
5.	Does the entire wetland 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 two years.
	NOTE: The riverine unit can contain depressions that are filled with water when the river is not flooding
	NO – go to 6 YES – The wetland class is Riverine
6.	Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time of
	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 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
O.	
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 your wetland. 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 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	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of	Treat as ESTUARINE under wetlands with special
freshwater wetland	characteristics

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

	Depressional and Flat Wetlands	Points				
	WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.	(only 1 score				
D 1	Does the wetland have the potential to improve water quality?	per box) $(see p.38)$				
ו ע	D 1.1 Characteristics of surface water flows out of the wetland:	(see p.50)				
	• Unit is a depression with no surface water leaving it (no outlet)	Figure				
	Unit has an intermittently flowing, OR highly constricted, permanently flowing outlet points = 2					
	 Unit has an unconstricted, or slightly constricted, surface outlet (permanently flowing) points = 1 Unit is a "flat" depression (Q.7 on key), or in the Flats class, with permanent surface 					
	outflow and no obvious natural outlet and/or outlet is a man-made ditch points = 1	1				
	(If ditch is not permanently flowing treat unit as "intermittently flowing") Provide photo or drawing					
	D 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic (use NRCS definitions) YES points = 4 NO points = 0	0				
	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class):					
	• Wetland has persistent, ungrazed vegetation > = 95% of area	Figure				
	Wetland has persistent, ungrazed vegetation > = 1/2 of area	1				
	 Wetland has persistent, ungrazed vegetation > = 1/10 of area					
	Map of Cowardin vegetation classes					
	D 1.4 Characteristics of seasonal ponding or inundation: This is the area of the wetland that is ponded for at	Figure 3				
	least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 years.					
	Area seasonally ponded is > 1/2 total area of wetland	0				
	 Area seasonally ponded is > 1/4 total area of wetland					
	Map of Hydroperiods					
	Total for D 1 Add the points in the boxes above	2				
) 2	Does the wetland have the opportunity to improve water quality?	(see p. 44)				
_	Answer YES if you know or believe there are pollutants in groundwater or surface water coming into	(
	the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient					
	from the wetland? Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.					
	Grazing in the wetland or within 150 ft					
	Untreated stormwater discharges to wetland					
	Tilled fields or orchards within 150 ft. of wetland A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed					
	fields, roads, or clear-cut logging	3.6.1.1.11				
	Residential, urban areas, golf courses are within 150 ft. of wetland	Multiplier				
	Wetland is fed by groundwater high in phosphorus or nitrogen					
	X Other Forest practices within 150 feet of wetland	<u>2</u>				
	X Other Forest practices within 150 feet of wetland YES multiplier is 2 NO multiplier is 1					
u						
u	YES multiplier is 2 NO multiplier is 1					
	YES multiplier is 2 NO multiplier is 1 TOTAL – Water Quality Functions Multiply the score from D1 by D2; then add score to table on p. 1 HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation.					
	YES multiplier is 2 NO multiplier is 1 TOTAL – Water Quality Functions Multiply the score from D1 by D2; then add score to table on p. 1 HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation. Does the wetland have the potential to reduce flooding and erosion? D 3.1 Characteristics of surface water flows out of the wetland unit	4 (see p.46)				
	YES multiplier is 2 NO multiplier is 1 TOTAL – Water Quality Functions Multiply the score from D1 by D2; then add score to table on p. 1 HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation. Does the wetland have the potential to reduce flooding and erosion? D 3.1 Characteristics of surface water flows out of the wetland unit - Unit is a depression with no surface water leaving it (no outlet)	(see p.46)				
	YES multiplier is 2 NO multiplier is 1 TOTAL – Water Quality Functions Multiply the score from D1 by D2; then add score to table on p. 1 HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation. Does the wetland have the potential to reduce flooding and erosion? D 3.1 Characteristics of surface water flows out of the wetland unit Unit is a depression with no surface water leaving it (no outlet) points = 4 Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2	(see p.46)				
	TOTAL – Water Quality Functions Multiply the score from D1 by D2; then add score to table on p. 1 HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation. Does the wetland have the potential to reduce flooding and erosion? D 3.1 Characteristics of surface water flows out of the wetland unit Unit is a depression with no surface water leaving it (no outlet)	(see p.46)				
	TOTAL – Water Quality Functions Multiply the score from D1 by D2; then add score to table on p. 1 HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation. Does the wetland have the potential to reduce flooding and erosion? D 3.1 Characteristics of surface water flows out of the wetland unit Unit is a depression with no surface water leaving it (no outlet) points = 4 Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2 Unit is a "flat" depression (Q.7 on key) or in the Flats class, with permanent surface outflow and no obvious natural outlet and/or outlet is a man-made ditch points = 1 (If ditch is not permanently flowing treat unit as "intermittently flowing")	(see p.46)				
	TOTAL – Water Quality Functions Multiply the score from D1 by D2; then add score to table on p. 1 HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation. Does the wetland have the potential to reduce flooding and erosion? D 3.1 Characteristics of surface water flows out of the wetland unit Unit is a depression with no surface water leaving it (no outlet) points = 4 Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2 Unit is a "flat" depression (Q.7 on key) or in the Flats class, with permanent surface outflow and no obvious natural outlet and/or outlet is a man-made ditch points = 1 (If ditch is not permanently flowing treat unit as "intermittently flowing") Unit has an unconstricted, or slightly constricted, surface outlet (permanently flowing) points = 0	(see p.46)				
	TOTAL – Water Quality Functions Multiply the score from D1 by D2; then add score to table on p. 1 HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation. Does the wetland have the potential to reduce flooding and erosion? D 3.1 Characteristics of surface water flows out of the wetland unit Unit is a depression with no surface water leaving it (no outlet)	(see p.46)				
	TOTAL – Water Quality Functions Multiply the score from D1 by D2; then add score to table on p. 1 HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation. Does the wetland have the potential to reduce flooding and erosion? D 3.1 Characteristics of surface water flows out of the wetland unit Unit is a depression with no surface water leaving it (no outlet) points = 4 Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2 Unit is a "flat" depression (Q.7 on key) or in the Flats class, with permanent surface outflow and no obvious natural outlet and/or outlet is a man-made ditch points = 1 (If ditch is not permanently flowing treat unit as "intermittently flowing") Unit has an unconstricted, or slightly constricted, surface outlet (permanently flowing) points = 0 D 3.2 Depth of storage during wet periods. Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry). Marks of ponding are 3 ft. or more above the surface or bottom of the outlet points = 7	(see p.46)				
	TOTAL – Water Quality Functions Multiply the score from D1 by D2; then add score to table on p. 1 HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation. Does the wetland have the potential to reduce flooding and erosion? D 3.1 Characteristics of surface water flows out of the wetland unit Unit is a depression with no surface water leaving it (no outlet)	(see p.46)				
	TOTAL – Water Quality Functions Multiply the score from D1 by D2; then add score to table on p. 1 HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation. Does the wetland have the potential to reduce flooding and erosion? D 3.1 Characteristics of surface water flows out of the wetland unit Unit is a depression with no surface water leaving it (no outlet)	(see p.46)				
	TOTAL – Water Quality Functions Multiply the score from D1 by D2; then add score to table on p. 1 HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation. Does the wetland have the potential to reduce flooding and erosion? D 3.1 Characteristics of surface water flows out of the wetland unit Unit is a depression with no surface water leaving it (no outlet)	(see p.46)				
	TOTAL – Water Quality Functions Multiply the score from D1 by D2; then add score to table on p. 1 HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation. Does the wetland have the potential to reduce flooding and erosion? D 3.1 Characteristics of surface water flows out of the wetland unit Unit is a depression with no surface water leaving it (no outlet)	(see p.46)				
	TOTAL – Water Quality Functions Multiply the score from D1 by D2; then add score to table on p. 1 HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation. Does the wetland have the potential to reduce flooding and erosion? D 3.1 Characteristics of surface water flows out of the wetland unit - Unit is a depression with no surface water leaving it (no outlet)	(see p.46)				
	TOTAL – Water Quality Functions Multiply the score from D1 by D2; then add score to table on p. 1 HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation. Does the wetland have the potential to reduce flooding and erosion? D 3.1 Characteristics of surface water flows out of the wetland unit Unit is a depression with no surface water leaving it (no outlet)	(see p.46) 0				
u	TOTAL – Water Quality Functions Multiply the score from D1 by D2; then add score to table on p. 1 HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation. Does the wetland have the potential to reduce flooding and erosion? D 3.1 Characteristics of surface water flows out of the wetland unit Unit is a depression with no surface water leaving it (no outlet)	(see p.46)				
	TOTAL – Water Quality Functions Multiply the score from D1 by D2; then add score to table on p. 1 HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation. Does the wetland have the potential to reduce flooding and erosion? D 3.1 Characteristics of surface water flows out of the wetland unit Unit is a depression with no surface water leaving it (no outlet)	(see p.46) 0				

D 4	Does the wetland have the opportunity to reduce flooding and erosion? Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. Note which of the following indicators of opportunity apply. Wetland is in a headwater of a river or stream that has flooding problems. Wetland drains to a river or stream that has flooding problems	(see p. 49)	
	Wetland drains to a river or stream that has flooding problems Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems Other		
	YES multiplier is 2 NO multiplier is 1		
u	TOTAL – Hydrologic Functions Multiply the score from D3 by D4; then <i>add score to table on p. 1</i>	3	

D 4: According to King County iMAP data, Wetland D is located within the Lower Cedar River drainage basin. Water leaving Wetland D flows for greater than 10 miles before flowing into the nearest *mapped* downgradient flood hazard area (associated with Cedar Creek to the north of Rock Creek Natural Area). During this ~ 10 miles, the surface flows through a number of ineffective culverts that limit free water movement.

While there are likely *unmapped* flood areas closer than 10 miles, Wetland D flows through a highly constricted culvert beneath a road just downgradient of Wetland F. Further, after leaving Wetland F the water does not flow directly into a stream with documented flood problems. In accordance with the WASHINGTON STATE WETLAND RATING SYSTEM for WESTERN WASHINGTON Annotated Version August 2006, Wetland D does not provide the opportunity to reduce flooding and erosion above a de minimis level.

 $Wetland\ name\ or\ number-Wetland\ D$

Thes	se questi	ions apply to wetlands of all HGM classes.	Points		
	HABIT	TAT FUNCTIONS – Indicators that wetland functions to provide important habitat.	(only 1 scor per box)		
H 1	1 Does the wetland have the <u>potential</u> to provide habitat for many species?				
	H 1.1	Vegetation structure (see P. 72): Check the types of vegetation classes present (as defined by Cowardin) – Size threshold for each class is 1/4 acre or more than 10% of the area if unit is smaller than 2.5 acres. Aquatic Bed Emergent plants Scrub/shrub (areas where shrubs have > 30% cover) X Forested (areas where trees have > 30% cover) If the unit has a forested class check if: 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. Add the number of vegetation types that qualify. If you have: 4 structures or morepoints = 4 2 structures	Figure 1		
	H 1.2	Seasonally flooded or inundated Saturated only Permanently flowing stream or river in, or adjacent to, the wetland Seasonally flowing stream in, or adjacent to, the wetland Lake-fringe wetland	Figure 2		
	Н 1.3	Richness of Plant Species (see p. 75): 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) You do not have to name the species. Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle. If you counted: > 19 speciespoints = 2 5 - 19 speciespoints = 1 List species below if you want to: < 5 speciespoints = 0	0		
	H 1.4	Interspersion of Habitats (see p. 76): Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none. Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always "high". Use map of Cowardin classes.	0		
	H 1.5	Special Habitat Features (see p. 77): Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column. Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft. long) Standing snags (diameter at the bottom > 4 inches) in the wetland Undercut banks are present for at least 6.6 ft. (2m) and/or overhanging vegetation extends at least 3.3 ft. (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft. (10m) 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 (cut shrubs or trees that have not yet turned grey/brown) At least 1/4 acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated (structures for egg-laying by amphibians)	1		
X Invasive plants cover less than 25% of the wetland area in each stratum of plants NOTE: The 20% stated in early printings of the manual on page 78 is an error. H 1 TOTAL Score – potential for providing habitat Add the points in the column above.					

H 2	Does t	he wetland have the opportunity to provide habitat for many species?	(only 1 score per box)
	H 2.1	Buffers (see P. 80): Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed". 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% of circumference. No structures are within the undisturbed part of buffer (relatively undisturbed also means no grazing, no landscaping, no daily human use). points = 5 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. points = 4 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference. points = 4 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference. points = 3 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. points = 3 If buffer does not meet any of the criteria above: X No paved areas (except paved trails) or buildings within 25m (80 ft) of wetland > 95% circumference. Light to moderate grazing or lawns are OK. points = 2 No paved areas of buildings within 50m of wetland for > 50% circumference. Light to moderate grazing or lawns are OK. points = 1 Vegetated buffers are < 2m wide (6.6 ft) for more than 95% circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland)points = 0 Buffer does not meet any of the criteria above. Arial photo showing buffers	Figure 2
	H 2.2	Corridors and Connections (see p. 81) H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft. wide, has at least a 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (Dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor). YES = 4 points (go to H 2.3) NO = go to H 2.2.2 H. 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50 ft. wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? OR a Lakefringe wetland, if it does not have an undisturbed corridor as in the question above? YES = 2 points (go to H 2.3) NO = go to H 2.2.3 H. 2.2.3 Is the wetland: Within 5 mi (8km) of a brackish or salt water estuary OR Within 3 miles of a large field or pasture (> 40 acres) OR Within 1 mile of a lake greater than 20 acres? NO = 0 points	1

H 2.5 Near or adjacent to other priority habitats issed by WDPW (see p. 82): (see new and complete descriptions of WDPW prioriny habitats and the counties in which they can be found, in the PHS report habitats was understanded. NOTE: the connections do not have to be relatively undisturbed. Aspen Stands: Pure or mixed stands of aspen greater than 0.4 ha (1 acre). Biodiversity Areas and Corridors: Areas of habitat that are relatively important to various species of native fish and wildlife (field descriptions in WDPW PHS report p. 152.). 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 20 trees/ha of trees/acre) > 81 cm (52 in) dbh or > 200 years of age. (Mature forests) Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 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) coverage of the oak component is important (full desprowth; 80 - 200) years old west of the Cascade crest overage of the oak component is important (full descriptions in WDPW PHS report p. 158). Riparian: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial coosystems which mutually influence each other. Westside Prairies: Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a ver prairie (add descriptions in WDPW PHS report p. 158). 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 Pages South and the seed of the seed o	nen record the result on p. 1 8	Total Score for Habitat Functions Add the points for H 1 and H 2; then record to
descriptions of WDFW priority habitats, and the countries in which they can be found, in the PHS report http://wdfw.org.org/bab/bab/sis.htm.) Which of the following priority habitats are within 350 ft. (100m) of the wetland unit? NOTE: the commections do not have to be relatively undisturbed. Aspen Stander: Pure or mixed stands of aspen greater than 0.4 ha (1 scre). Biodiversity Areas and Corridors: Areas of habitat that are relatively important to various species of native fish and wildlife (luld descriptions in WDFW PHS report p. 152). Herbaceous Balds: Variable size patches of grass and forbs on shallow soils over bedrock. Old-growth/Mature forests: (Old-growth west of Ciscaede crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of daws with average diameters exceeding 53 cm (21 in) dbh: crown cover may be less that 100%: decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years of dwest of the Cascade crest. Oregon white Oak: Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (full descriptions in WDFW PHS report p. 1.89). 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. 1.61). Instream: The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for insterant fish and wildlife resources. Nearshore: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore, and fugets priority habitats. These included to		
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H 2.3 Near or adjacent to other priority habitats listed by WDFW (see p. 82): (see new and complete	ound, in the PHS report	
HO2 None allowed to the adjusted being the bei	new and complete	H 2.3 Near or adjacent to other priority habitats listed by WDFW (see p. 82): (see new and con

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

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

	Wetland Type – Check off any criteria that apply to the wetland. Circle the Category when the appropriate					
	criteria are met.					
SC1	Estuarine wetlands? (see p.86)					
	Does the wetland unit meet the following criteria for Estuarine wetlands? The dominant water regime is tidal,					
	Vegetated, and					
	With a salinity greater than 0.5 ppt.					
	$\mathbf{YES} = \mathbf{Go \ to \ SC \ 1.1} \qquad \mathbf{NO} \mathbf{X}$					
	SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural					
	Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC	Cat. 1				
	332-30-151? YES = Category I $NO = go to SC 1.2$	Cat. 1				
	SC 1.2 Is the wetland at least 1 acre in size and meets at least two of the following conditions?					
	$YES = Category I \qquad NO = Category II$	Cat. I				
	The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has	3400 1				
	less than 10% cover of non-native plant species. If the non-native Spartina spp, are only species	Cat. II				
	that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/I). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh					
	with native species would be a Category 1. Do not, however, exclude the area of Spartina in					
	determining the size threshold of 1 acre.	Dual				
	At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland	Rating				
	The wetland has at least 2 of the following features: tidal channels, depressions with open water,	I/II				
	or contiguous freshwater wetlands.					
SC2	Natural Heritage Wetlands (see p. 87)					
502	Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as					
	either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or					
	Sensitive plant species.					
	SC 2.1 Is the wetland being rated in a Section/Township/Range that contains a natural heritage wetland? (This					
	question is used to screen out most sites before you need to contact WNHP/DNR.)					
	S/T/R information from Appendix D or accessed from WNHP/DNR web site					
	YES Contact WNHP/DNR (see p. 79) and go to SC 2.2 NO \underline{X}					
	SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as a site with state threatened					
	or endangered plant species?					
	YES = Category 1 NO \underline{X} not a Heritage Wetland					
SC3	Bogs (see p. 87)					
	Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? Use					
	the key below to identify if the wetland is a bog. If you answer yes you will still need to rate the					
	wetland based on its function.					
	1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that					
	compose 16 inches or more of the first 32 inches of soil profile? (See Appendix B for a field key to identify organic soils)? YES = go to question 3 NO = go to question 2					
	2. Does the wetland have organic soils, either peats or mucks that are less than 16 inches deep over					
	bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or					
	pond? YES = go to question 3 NO = is not a bog for purpose of rating					
	3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present,					
	consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more					
	than 30% of the total shrub and herbaceous cover consists of species in Table 3)?					
	YES = Is a bog for purpose of rating NO = go to question 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" deep. If the pH is					
	less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog.					
	4. Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western					
	hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine. WITH any of					
	the species (or combination of species) on the bog species plant list in Table 3 as a significant					
	component of the ground cover (> 30% coverage of the total shrub/herbaceous cover)?	Cat. I				
	$\mathbf{YES} = \mathbf{Category} \ \mathbf{I} \qquad \qquad \mathbf{NO} = \mathbf{Is} \ \mathbf{not} \ \mathbf{a} \ \mathbf{bog} \ \mathbf{for} \ \mathbf{purpose} \ \mathbf{of} \ \mathbf{rating}$					

	T						
SC4	4 Forested Wetlands (see p. 90)						
	Does the wetland have at least 1 acre of forest that meet one of these criteria for the Department of Fish						
	and Wildlife's forests as priority habitats? If you answer yes you will still need to rate the wetland						
	based on its function.						
	Old-growth forests: (west of Cascade Crest) Stands of at least two three species forming a						
	multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare)						
	that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm or						
	more).						
	NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees						
	in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW						
	criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter.						
	Mature forests: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old						
	OR have an average diameters (dbh) exceeding 21 inches (53 cm); crown cover may be less than						
	100%; decay, decadence, numbers of snags, and quantity of large downed material is generally	G . T					
	less than that found in old-growth.	Cat. I					
	$\mathbf{YES} = \mathbf{Category} \ \mathbf{I} \qquad \mathbf{NO} = \underline{\mathbf{X}} \ \text{not a forested wetland with special characteristics}$						
SC5	Wetlands in Coastal Lagoons (see p. 91)						
	Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?						
	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 surface water that is saline or brackish (> 0.5						
	ppt) during most of the year in at least a portion of the lagoon (needs to be measured near the						
	bottom.)						
	YES = Go to SC 5.1 NO \underline{X} not a wetland in a coastal lagoon						
	SC 5.1 Does the wetland meet all of the following three conditions?						
	The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing) and has						
	less than 20% cover of invasive plant species (see list of invasive species on p. 74).						
	At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed						
	or un-mowed grassland.	Cat. I					
	The wetland is larger than 1/10 acre (4350 square ft.)						
	YES = Category I NO = Category II	Cat. II					
SC6	Interdunal Wetlands (see p. 93)						
	Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or						
	WBUO)?						
	YES = Go to SC 6.1 NO \underline{X} not an interdunal wetland for rating						
	If you answer yes you will still need to rate the wetland based on its functions.						
	In practical terms that means the following geographic areas:						
	 Long Beach Peninsula lands west of SR 103 Grayland-Westport lands west of SR 105 						
	• Ocean Shores-Copalis – lands west of SR 105 • Ocean Shores-Copalis – lands west of SR 115 and SR 109						
	SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is one acre or larger?						
	$YES = Category II \qquad NO = go to SC 6.2$	Cat. II					
	SC 6.2 Is the wetland between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre?	Cut. 11					
	YES = Category III	Cat. III					
	Category of wetland based on Special Characteristics						
u	Choose the "highest" rating if wetland falls into several categories, and record on p. 1.						
	If you answered NO for all types enter "Not Applicable" on p. 1						

WETLAND RATING FORM - WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users Updated Oct. 2008 with the new WDFW definitions for priority habitats

Name of we	tland (if known): Wetland E – 1042.00	05: Ravensda	.le	Г	Date of s	ite visit: <u>12/05</u>	/17
Rated by: E	mily Swaim/Richard Peel Tra	ned by Ecolo	gy? Yes X	No I	Date of t	raining: <u>3/31/1</u>	6
SEC: 01	TWNSHP: 21N	RNGE: 06E_	Is	S/T/R in Apper	ndix D?	Yes	No X _
	Map of wetland unit: Fig	ure <u>1</u>	E	Estimated size <u>0</u>	.02 acres	<u>s</u>	
	S	UMMARY (F RATING	,			
Category ba	ased on FUNCTIONS provided by we	tland: IV					
	Category I = Score > 70	So	ore for Wate	er Quality Funct	ions	8	
	Category II = Score 51 - 69	1 - 69 Score for Hydrologic Functions				9	
Category III = Score 30 – 50 Score for Habitat Functions				8			
	Category IV = Score < 30		TOTAL	Score for Funct	tions	25	
Category ba	sed on SPECIAL CHARACTERISTCS	S of Wetland	Does not	t apply		-	
	Final Categor	y (choose the	"highest" c	ategory from ab	ove")	IV	
	Summary of basic infor	mation abou	t the wetlan	ıd unit.			
	Wetland Unit has Special			HGM Class			
	Characteristics			r Rating	N/		
	Estuarine Natural Heritage Wetland		epressional		X		

Summary of Susic Information a				
Wetland Unit has Special Characteristics				
Estuarine				
Natural Heritage Wetland				
Bog				
Mature Forest				
Old Growth Forest				
Coastal Lagoon				
Interdunal				
None of the above	X			

Wetland HGM Class used for Rating	
Depressional	X
Riverine	
Lake-fringe	
Slope	
Flats	
Freshwater Tidal	
Check if unit has multiple HGM classes present	

Does the wetland being rated meet any of the criteria below? If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

	Check List for Wetlands that Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1.	Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered animal or plant species (T/E species)? For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		X
SP2.	Has the wetland unit been documented as habitat for any State listed Threatened or Endangered animal species? For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category 1 Natural Heritage Wetlands (see p. 19 of data form).		X
SP3.	Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?		X
SP4.	Does the wetland unit have a local significance in addition to its functions? For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		X

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

Wetland name or number – Wetland E
The hydrogeomorphic classification groups wetlands in to those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Classification of Vegetated Wetlands for Western Washington

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 (i.e. except during floods)? NO – go to 2 YES – the wetland class is Tidal Fringe
	If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)? YES – Freshwater Tidal Fringe NO – Saltwater Tidal Fringe (Estuarine) If your wetland can be classified as a Freshwater Tidal Fringe use the forms for Riverine wetlands. If it is a Saltwater Tidal Fringe it is rated as an Estuarine wetland. Wetlands that were call estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p).
2.	The entire wetland unit is flat and precipitation is 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 elassified as a "Flats" wetland, use the form for Depressional wetlands.
3.	Does the entire wetland meet both of the following criteria? The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) where at least 20 acres (8ha) in size; At least 30% of the open water area is deeper than 6.6 (2 m)? NO - go to 4 YES - The wetland class is Lake-fringe (Lacustrine Fringe)
4.	Does the entire wetland meet all of the following criteria? x The wetland is on a slope (slope can be very gradual). x 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? NOTE: Surface water does not pond in these types of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 foot deep). NO - go to 5 YES - The wetland class is Slope
5.	Does the entire wetland 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 two years. NOTE: The riverine unit can contain depressions that are filled with water when the river is not flooding NO - go to 6 YES - The wetland class is Riverine
6.	Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time of 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 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 your wetland. 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 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	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of	Treat as ESTUARINE under wetlands with special
freshwater wetland	characteristics

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

D	Depressional and Flat Wetlands	Points
	WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.	(only 1 score
) 1	Does the wetland have the <u>potential</u> to improve water quality?	per box) $(see p.38)$
<i>,</i> 1	D 1.1 Characteristics of surface water flows out of the wetland:	(see p.30)
	• Unit is a depression with no surface water leaving it (no outlet) points = 3	Figure
	· Unit has an intermittently flowing, OR highly constricted, permanently flowing outlet points = 2	
	Unit has an unconstricted, or slightly constricted, surface outlet (permanently flowing) points = 1 Unit is a "flat" depression (Q.7 on key), or in the Flats class, with permanent surface	
	outflow and no obvious natural outlet and/or outlet is a man-made ditch points = 1	3
	(If ditch is not permanently flowing treat unit as "intermittently flowing") Provide photo or drawing	
	D 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic (use NRCS definitions)	0
	YES points = 4 NO points = 0 D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class):	
	• Wetland has persistent, ungrazed vegetation (emergent, sinub, and/or forest Cowardin class).	Figure
	Wetland has persistent, ungrazed vegetation > = 1/2 of area	1
	• Wetland has persistent, ungrazed vegetation $> = 1/10$ of area	1
	• Wetland has persistent, ungrazed vegetation < 1/10 of area	
	D 1.4 Characteristics of seasonal ponding or inundation: This is the area of the wetland that is ponded for at	
	least 2 months, but dries out sometime during the year. Do not count the area that is permanently	Figure 3
	ponded. Estimate area as the average condition 5 out of 10 years. Area seasonally ponded is > 1/2 total area of wetland	0
	• Area seasonally ponded is > 1/2 total area of wetland	
	· Area seasonally ponded is < 1/4 total area of wetland	
	Map of Hydroperiods	
	Total for D 1 Add the points in the boxes above	
2	Does the wetland have the opportunity to improve water quality?	(see p. 44)
	Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient	
	from the wetland? Note which of the following conditions provide the sources of pollutants. A unit	
	may have pollutants coming from several sources, but any single source would qualify as opportunity.	
	Grazing in the wetland or within 150 ft	
	Untreated stormwater discharges to wetland Tilled fields or orchards within 150 ft. of wetland	
	A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed	
	fields, roads, or clear-cut logging	Multiplier
	Residential, urban areas, golf courses are within 150 ft. of wetland Wetland is fed by groundwater high in phosphorus or nitrogen	<u>2</u>
	X Other Forest practices within 150 feet of wetland	_
	YES multiplier is 2 NO multiplier is 1	
u	<u>TOTAL</u> – Water Quality Functions Multiply the score from D1 by D2; then <i>add score to table on p. 1</i>	8
	HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation.	1
3	Does the wetland have the <u>potential</u> to reduce flooding and erosion?	(see p.46)
	D 3.1 Characteristics of surface water flows out of the wetland unit	
	 Unit is a depression with no surface water leaving it (no outlet)	
	Unit is a "flat" depression (Q.7 on key) or in the Flats class, with permanent surface	4
	outflow and no obvious natural outlet and/or outlet is a man-made ditch points = 1	
	(If ditch is not permanently flowing treat unit as "intermittently flowing") Unit has an unconstricted or clicktly constricted surface outlet (normanently flowing) points = 0	
	Unit has an unconstricted, or slightly constricted, surface outlet (permanently flowing) points = 0 D 3.2 Depth of storage during wet periods. Estimate the height of ponding above the bottom of the outlet. For	
	units with no outlet measure from the surface of permanent water or deepest part (if dry).	
	Marks of ponding are 3 ft. or more above the surface or bottom of the outlet points = 7	
	 The wetland is a "headwater" wetland	5
	• Marks are at least 0.5 ft. to < 2 ft. from surface or bottom of outlet	
	• Wetland is flat (yes to Q.2 or Q.7 on key)but has small depressions on the surface that trap water points = 1	
	Marks of ponding less than 0.5 ft	
	D 3.3 Contribution of wetland unit 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 unit	_
		0
	• The area of the basin is 10 to 100 times the area of the unit	
	 The area of the basin is 10 to 100 times the area of the unit	
	• The area of the basin is 10 to 100 times the area of the unit	 -

D 4	Does the wetland have the <u>opportunity</u> to reduce flooding and erosion? Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity,	(see p. 49)
	it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide	
	gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. <i>Note which of the following</i>	
	indicators of opportunity apply.	
	Wetland is in a headwater of a river or stream that has flooding problems.	
	Wetland drains to a river or stream that has flooding problems Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or	Multiplier
	stream that has flooding problems	1
	Other	
	YES multiplier is 2 NO multiplier is 1	
u	<u>TOTAL</u> – Hydrologic Functions Multiply the score from D3 by D4; then <i>add score to table on p. 1</i>	9

D 4: According to King County iMAP data, Wetland E is located within the Covington Creek drainage basin. If Wetland E contained an outlet, water would not be expected to enter any stream due to the surrounding topography. If, through groundwater flow, water from the Wetland E area reached Ravensdale Creek on the subject property, Ravensdale Creek flows subsurface through a mined-out pit before reaching any downstream area with documented flooding problems. In accordance with the WASHINGTON STATE WETLAND RATING SYSTEM for WESTERN WASHINGTON Annotated Version August 2006, Wetland E does not provide the opportunity to reduce flooding and erosion above a de minimis level.

	se questi	ions apply to wetlands of all HGM classes.	Points
	HABIT	TAT FUNCTIONS – Indicators that wetland functions to provide important habitat.	(only 1 sco per box)
H 1	Does t	he wetland have the <u>potential</u> to provide habitat for many species?	
		Vegetation structure (see P. 72): Check the types of vegetation classes present (as defined by Cowardin) – Size threshold for each class is 1/4 acre or more than 10% of the area if unit is smaller than 2.5 acres. Aquatic Bed Emergent plants X Scrub/shrub (areas where shrubs have > 30% cover) Forested (areas where trees have > 30% cover) If the unit has a forested class check if: 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. Add the number of vegetation types that qualify. If you have: 4 structures or morepoints = 4 Map of Cowardin vegetation classes 3 structures	Figure
	H 1.2	cover more than 10% of the wetland or 1/4 acre to count (see text for descriptions of hydroperiods). X Permanently flooded or inundated 4 or more types present points = 3 Seasonally flooded or inundated 3 or more types present points = 2 Occasionally flooded or inundated 2 types present points = 1 Saturated only 1 type present points = 0 Permanently flowing stream or river in, or adjacent to, the wetland Seasonally flowing stream in, or adjacent to, the wetland Lake-fringe wetland	Figure
		Freshwater tidal wetland 2 points Map of hydroperiods	
	Н 1.3	Richness of Plant Species (see p. 75): 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) You do not have to name the species. Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle. If you counted: > 19 speciespoints = 2 5 - 19 speciespoints = 1 List species below if you want to: < 5 speciespoints = 0	1
	H 1.4	Interspersion of Habitats (see p. 76): Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.	
		the chasses and an regenated areas (can metade open water of materials) is high, median, low, of none.	
		None = 0 points Low = 1 point Moderate = 2 points Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always "high".	Figure
	(Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is	0
	H 1.5	Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always "high". Use map of Cowardin classes.	0

2 Does	the wetland have the opportunity to provide habitat for many species?	(only 1 score per box)
H 2.1	Buffers (see P. 80): Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed". 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% of circumference. No structures are within the undisturbed part of buffer (relatively undisturbed also means no grazing, no landscaping, no daily human use). ———————————————————————————————————	Figure
H 2.2	Corridors and Connections (see p. 81) H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft. wide, has at least a 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (Dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor). YES = 4 points (go to H 2.3) NO = go to H 2.2.2 H. 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50 ft. wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? OR a Lakefringe wetland, if it does not have an undisturbed corridor as in the question above? YES = 2 points (go to H 2.3) NO = go to H 2.2.3 H. 2.2.3 Is the wetland: Within 5 mi (8km) of a brackish or salt water estuary OR Within 3 miles of a large field or pasture (> 40 acres) OR WES = 1 point NO = 0 points	1

- H 2.1: The actively managed forestlands surrounding Wetland E do not meet the definition of "relatively undisturbed". Disturbance includes access roads, transmission line, un-reclaimed coal strip mines, managed forest lands, dense populations of invasive vegetation (e.g., Himalayan blackberry and Scotch broom), recent grading actions associated with the partial fill of Trench E, et cetera.
- H 2.2: Wetland E is not part of a relatively undisturbed and unbroken vegetated corridor. The nearest brackish or saltwater estuary would be greater than 20 miles away. Wetland E is located within approximately 1-mile of Lake No. 12, which is greater than 20 acres in size and considered a Shoreline of the State.

	H 2.3 Near or adjacent to other priority habitats listed by WDFW (see p. 82): (see new and complete	
	descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report	
	http://wdfw.wa.gov/hab/phslist.htm)	
	Which of the following priority habitats are within 330 ft. (100m) of the wetland unit?	
	NOTE: the connections do not have to be relatively undisturbed.	
	Aspen Stands: Pure or mixed stands of aspen greater than 0.4 ha (1 acre).	
	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 p. 152).	
	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 20 trees/ha (8 trees/acre) > 81 cm (32 in)	
	dbh or > 200 years of age. (Mature forests) Stands with average diameters exceeding 53 cm (21 in) dbh; crown	
	cover may be less that 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: Woodlands 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).	
	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	4
	a wet prairie (full descriptions in WDFW PHS report p. 161).	1
	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: pp. 167-169 and glossary in Appendix A).	
	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 7.6 m (25 ft) high and occurring below 5000 ft.	
	Talus: Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt,	
	andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.	
	X 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 > 51 cm (20 in) in	
	western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30 cm (12 in) in diameter at the largest	
	end, and > 6 m (20 ft) long.	
	If wetland has 3 or more priority habitats = 4 points	
	If wetland has 2 priority habitats = 3 points	
	If wetland has 1 priority habitat = 1 point No habitats = 0 points	
	Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are	
	addressed in question H 2.4)	
	H 2.4 Wetland Landscape: Choose the one description of the landscape around the wetland that best fits (see p. 84)	
	· There are at least 3 other wetlands within 1/2 mile, and the connections between them are	
	relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating,	
	but connections should NOT be bisected by paved roads, fill, fields, or other development points = 5	
	The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe	
	wetlands within 1/2 milepoints = 5	
		3
	• There are at least 3 other wetlands within 1/2 mile, BUT the connections between them are	
	disturbedpoints = 3	
	· The wetland fringe on a lake with disturbance and there are 3 other lake-fringe wetlands	
	within 1/2 milepoints = 3	
	• There is at least 1 wetland within 1/2 mile	
	1	
	• There are no wetlands within 1/2 milepoints = 0	
	H 2 TOTAL Score – opportunity for providing habitat Add the scores from H2.1, H2.2, H2.3, H2.4	7
	TOTAL for H 1 from page 8	1
u	Total Score for Habitat Functions Add the points for H 1 and H 2; then record the result on p. 1	8
	F F	

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

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

	Wetland Type – Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.	
SC1	Estuarine wetlands? (see p.86)	
SCI	Does the wetland unit meet the following criteria for Estuarine wetlands?	
	The dominant water regime is tidal,	
	Vegetated, and	
	With a salinity greater than 0.5 ppt.	
	YES = Go to SC 1.1 NO \underline{X}	
	SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC	Cat 1
	332-30-151? YES = Category I NO = go to SC 1.2	Cat. 1
	SC 1.2 Is the wetland at least 1 acre in size and meets at least two of the following conditions?	
	YES = Category I NO = Category II	Cat. I
	The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has	Cat. I
	less than 10% cover of non-native plant species. If the non-native Spartina spp., are only species	Cat. II
	that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh	Cut. 11
	with native species would be a Category 1. Do not, however, exclude the area of Spartina in	
	determining the size threshold of 1 acre.	Dual
	At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland	Rating
	The wetland has at least 2 of the following features: tidal channels, depressions with open water,	I/II
	or contiguous freshwater wetlands.	
SC2	Natural Heritage Wetlands (see p. 87)	
	Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or	
	Sensitive plant species.	
	SC 2.1 Is the wetland being rated in a Section/Township/Range that contains a natural heritage wetland? (<i>This</i>	
	question is used to screen out most sites before you need to contact WNHP/DNR.)	
	S/T/R information from Appendix D or accessed from WNHP/DNR web site	
	YES Contact WNHP/DNR (see p. 79) and go to SC 2.2 NO \underline{X}	
	SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as a site with state threatened	
	or endangered plant species?	Cat I
	$\mathbf{YES} = \mathbf{Category 1} \qquad \qquad \mathbf{NO} \ \underline{\mathbf{X}} \qquad \text{not a Heritage Wetland}$	
SC3	Bogs (see p. 87)	
	Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? Use the key below to identify if the wetland is a bog. If you answer yes you will still need to rate the	
	wetland based on its function.	
	1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that	
	compose 16 inches or more of the first 32 inches of soil profile? (See Appendix B for a field key to	
	identify organic soils)? YES = go to question 3 NO = go to question 2	
	2. Does the wetland have organic soils, either peats or mucks that are less than 16 inches deep over	
	bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or	
	pond? YES = go to question 3 NO = is not a bog for purpose of rating NO = is not a bog for purpose of rating	
	3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more	
	than 30% of the total shrub and herbaceous cover consists of species in Table 3)?	
	YES = Is a bog for purpose of rating NO = go to question 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" deep. If the pH is	
	less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog.	
	4. Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western	
	hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine. WITH any of	
	the species (or combination of species) on the bog species plant list in Table 3 as a significant	a : -
	component of the ground cover (> 30% coverage of the total shrub/herbaceous cover)? YES = Category I NO = Is not a bog for purpose of rating	Cat. I
	TES – Category 1 NO = 1s not a bog for purpose of fatting	

SC4	Forested Wetlands (see p. 90)	
	Does the wetland have at least 1 acre of forest that meet one of these criteria for the Department of Fish	
	and Wildlife's forests as priority habitats? If you answer yes you will still need to rate the wetland	
	based on its function.	
	Old-growth forests: (west of Cascade Crest) Stands of at least two three species forming a	
	multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare)	
	that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm or	
	more).	
	NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees	
	in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW	
	criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter.	
	Mature forests: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old	
	OR have an average diameters (dbh) exceeding 21 inches (53 cm); 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.	Cat. I
	YES = Category I NO = \underline{X} not a forested wetland with special characteristics	
SC5	Wetlands in Coastal Lagoons (see p. 91)	
303	Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?	
	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 surface water that is saline or brackish (> 0.5	
	ppt) during most of the year in at least a portion of the lagoon (needs to be measured near the	
	bottom.)	
	YES = Go to SC 5.1 NO \underline{X} not a wetland in a coastal lagoon	
	SC 5.1 Does the wetland meet all of the following three conditions?	
	The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing) and has	
	less than 20% cover of invasive plant species (see list of invasive species on p. 74).	
	At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed	
	or un-mowed grassland.	Cat. I
	The wetland is larger than 1/10 acre (4350 square ft.)	
	YES = Category I NO = Category II	Cat. II
SC6	Interdunal Wetlands (see p. 93)	
SCU	Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or	
	WBUO)?	
	YES = Go to SC 6.1 NO \underline{X} not an interdunal wetland for rating	
	If you answer yes you will still need to rate the wetland based on its functions.	
	In practical terms that means the following geographic areas:	
	· 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	
	SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is one acre or larger?	
	$\mathbf{YES} = \mathbf{Category} \ \mathbf{II} \qquad \mathbf{NO} = \mathbf{go} \ \mathbf{to} \ \mathbf{SC} \ 6.2$	Cat. II
	SC 6.2 Is the wetland between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre?	
	YES = Category III	Cat. III
	Category of wetland based on Special Characteristics	
u	Choose the "highest" rating if wetland falls into several categories, and record on p. 1.	
	If you answered NO for all types enter "Not Applicable" on p. 1	

WETLAND RATING FORM - WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users Updated Oct. 2008 with the new WDFW definitions for priority habitats

Name of wetland (if known): Wetland F –	042.0005		Da	ate of si	ite visit: <u>12/05/</u>	17
Rated by: Emily Swaim/Richard Peel	Trained by Ecol	ogy? Yes X	No Da	ate of tr	aining: <u>3/31/16</u>	5
SEC: 01 TWNSHP: 21N						
	nit: Figure <u>1</u>					
	SUMMARY	OF RATING				
Category based on FUNCTIONS provide	l by wetland: IV					
Category I = Score > 70	S	core for Wate	r Quality Function	ons	4	
Category II = Score 51 - 69		Score for H	ydrologic Function	ons	10	
Category III = Score 30 – 5)	Score fo	r Habitat Function	ons	15	
Category IV = Score < 30		TOTAL	Score for Function	ons	29	
Category based on SPECIAL CHARACTE	— RISTCS of Wetland	Does not	apply			
Final Ca	tegory (choose th	e "highest" ca	ategory from abo	ve")	IV	
Summary of bas	c information abo	ut the wetlan	d unit.			
Wetland Unit has Sp	ecial		IGM Class			
Characteristics Estuarine	T	used for Depressional	Rating	X		
Natural Heritage Wet		Riverine		41		

Characteristics		used for Rating	
Estuarine		Depressional	X
Natural Heritage Wetland		Riverine	
Bog		Lake-fringe	
Mature Forest		Slope	
Old Growth Forest		Flats	
Coastal Lagoon		Freshwater Tidal	
Interdunal			
None of the above	X	Check if unit has multiple HGM classes present	

Does the wetland being rated meet any of the criteria below? If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

	Check List for Wetlands that Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1.	Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered animal or plant species (T/E species)? For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		X
SP2.	Has the wetland unit been documented as habitat for any State listed Threatened or Endangered animal species? For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category 1 Natural Heritage Wetlands (see p. 19 of data form).		X
SP3.	Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?		X
SP4.	Does the wetland unit have a local significance in addition to its functions? For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		X

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

Wetland name or number – Wetland F

The hydrogeomorphic classification groups wetlands in to those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Classification of Vegetated Wetlands for Western Washington

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 (i.e. except during floods)? NO – go to 2 YES – the wetland class is Tidal Fringe
	If yes is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?
	YES – Freshwater Tidal Fringe NO – Saltwater Tidal Fringe (Estuarine) If your wetland can be classified as a Freshwater Tidal Fringe use the forms for Riverine wetlands. If it is a Saltwater Tidal Fringe it
	is rated as an Estuarine wetland. Wetlands that were call estuarine in the first and second editions of the rating system are called Salt
	Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and
	this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p).
2.	The entire wetland unit is flat and precipitation is 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 meet both of the following criteria?
	The vegetated part of the wetland is on the shores of a body of permanent open water (without any
	vegetation on the surface) where at least 20 acres (8ha) in size;
	At least 30% of the open water area is deeper than 6.6 (2 m)? NO – go to 4 YES – The wetland class is Lake-fringe (Lacustrine Fringe)
4.	Does the entire wetland meet all of the following criteria?
т.	x 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?
	NOTE: Surface water does not pond in these types of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 foot deep).
	NO – go to 5 YES – The wetland class is Slope
5.	Does the entire wetland 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 two years.
	NOTE: The riverine unit can contain depressions that are filled with water when the river is not flooding.
	NO – go to 6 YES – The wetland class is Riverine
6.	Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time of
	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 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 your wetland. 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 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	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of	Treat as ESTUARINE under wetlands with special
freshwater wetland	characteristics

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

D	Depressional and Flat Wetlands	Points
	WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.	(only 1 score per box)
D 1	Does the wetland have the <u>potential</u> to improve water quality?	(see p.38)
	D 1.1 Characteristics of surface water flows out of the wetland: Unit is a depression with no surface water leaving it (no outlet)	Figure
	Unit has an unconstricted, or slightly constricted, surface outlet (permanently flowing) points = 1 Unit is a "flat" depression (Q.7 on key), or in the Flats class, with permanent surface outflow and no obvious natural outlet and/or outlet is a man-made ditch	2
	D 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic (use NRCS definitions) YES points = 4 NO points = 0	0
	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class): Wetland has persistent, ungrazed vegetation > = 95% of area	Figure
	Map of Cowardin vegetation classes D 1.4 Characteristics of seasonal ponding or inundation: This is the area of the wetland that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 years. Area seasonally ponded is > 1/2 total area of wetland points = 4 Area seasonally ponded is > 1/4 total area of wetland points = 0 Area seasonally ponded is < 1/4 total area of wetland points = 0 Map of Hydroperiods	Figure 3
	Total for D 1 Add the points in the boxes above	2
D 2	Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity. Grazing in the wetland or within 150 ft Untreated stormwater discharges to wetland Tilled fields or orchards within 150 ft. of wetland A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging Residential, urban areas, golf courses are within 150 ft. of wetland Wetland is fed by groundwater high in phosphorus or nitrogen X Other Forest practices within 150 feet of wetland YES multiplier is 2 NO multiplier is 1	(see p. 44) Multiplier 2
u	TOTAL – Water Quality Functions Multiply the score from D1 by D2; then add score to table on p. 1	4
	HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation.	•
D 3	Does the wetland have the <u>potential</u> to reduce flooding and erosion?	(see p.46)
	 D 3.1 Characteristics of surface water flows out of the wetland unit Unit is a depression with no surface water leaving it (no outlet)	2
	D 3.2 Depth of storage during wet periods. Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry). . Marks of ponding are 3 ft. or more above the surface or bottom of the outlet	
	D 3.3 Contribution of wetland unit 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 unit	3
	That the points in the boxes above	

D 4	Does the wetland have the opportunity to reduce flooding and erosion? Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. Note which of the following indicators of opportunity apply. Wetland is in a headwater of a river or stream that has flooding problems. Wetland drains to a river or stream that has flooding problems Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems	(see p. 49) Multiplier 1
	Other YES multiplier is 2 NO multiplier is 1	
u	TOTAL – Hydrologic Functions Multiply the score from D3 by D4; then <i>add score to table on p. 1</i>	10

D 4: According to King County iMAP data, Wetland F is located within the Lower Cedar River drainage basin. Water leaving Wetland F flows for greater than 10 miles before flowing into the nearest *mapped* downgradient flood hazard area (associated with Cedar Creek to the north of Rock Creek Natural Area). During this ~ 10 miles, the surface flows through a number of ineffective culverts that limit free water movement.

While there are likely unmapped flood areas closer than 10 miles, Wetland F flows through a highly constricted culvert beneath a road just downgradient of the wetland. Further, after leaving Wetland F the water does not flow directly into a stream with documented flood problems. In accordance with the WASHINGTON STATE WETLAND RATING SYSTEM for WESTERN WASHINGTON Annotated Version August 2006, Wetland F does not provide the opportunity to reduce flooding and erosion above a de minimis level.

Thes	se questi	ions apply to wetlands of all HGM classes.	Points
	HABIT	TAT FUNCTIONS – Indicators that wetland functions to provide important habitat.	(only 1 scor per box)
H 1	Does t	he wetland have the <u>potential</u> to provide habitat for many species?	. ,
	Н 1.1	Vegetation structure (see P. 72): Check the types of vegetation classes present (as defined by Cowardin) – Size threshold for each class is 1/4 acre or more than 10% of the area if unit is smaller than 2.5 acres. Aquatic Bed Emergent plants Scrub/shrub (areas where shrubs have > 30% cover) X Forested (areas where trees have > 30% cover) If the unit has a forested class check if: 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. Add the number of vegetation types that qualify. If you have: 4 structures or morepoints = 4 Map of Cowardin vegetation classes 3 structures	Figure 1
	H 1.2	Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or 1/4 acre to count (see text for descriptions of hydroperiods). X Permanently flooded or inundated 4 or more types present points = 3 Seasonally flooded or inundated 3 or more types present points = 2 Occasionally flooded or inundated 2 types present points = 1 Saturated only 1 type present points = 0 X Permanently flowing stream or river in, or adjacent to, the wetland Seasonally flowing stream in, or adjacent to, the wetland Lake-fringe wetland 2 points	Figure 2
	H 1.3	Freshwater tidal wetland 2 points Map of hydroperiods Richness of Plant Species (see p. 75):	
	11 1.3	Count the number of plant species in the wetland that cover at least 10 ft ² (different patches of the same species can be combined to meet the size threshold) You do not have to name the species. Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle. If you counted: > 19 speciespoints = 2 5 - 19 speciespoints = 1 List species below if you want to: < 5 speciespoints = 0	0
	H 1.4	Interspersion of Habitats (see p. 76): Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.	
		Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always "high".	Figure
	(Use map of Cowardin classes. [riparian braided channels]	
	H 1.5	Special Habitat Features (see p. 77): Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column. X Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft. long) X Standing snags (diameter at the bottom > 4 inches) in the wetland Undercut banks are present for at least 6.6 ft. (2m) and/or overhanging vegetation extends at least 3.3 ft. (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft. (10m) X 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 (cut shrubs or trees that have not yet turned grey/brown) At least 1/4 acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated (structures for egg-laying by amphibians) X Invasive plants cover less than 25% of the wetland area in each stratum of plants	4
		NOTE: The 20% stated in early printings of the manual on page 78 is an error.	

Does t	he wetland have the opportunity to provide habitat for many species?	(only 1 sco per box)
H 2.1	Buffers (see P. 80): Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed". 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% of circumference. No structures are within the undisturbed part of buffer (relatively undisturbed also means no grazing, no landscaping, no daily human use). points = 5 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. points = 4 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference. points = 4 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference. points = 3 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. points = 3 If buffer does not meet any of the criteria above: X No paved areas (except paved trails) or buildings within 25m (80 ft) of wetland > 95% circumference. Light to moderate grazing or lawns are OK. points = 2 No paved areas of buildings within 50m of wetland for > 50% circumference. Light to moderate grazing or lawns are OK. points = 1 Vegetated buffers are < 2m wide (6.6 ft) for more than 95% circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland)points = 0 Buffer does not meet any of the criteria above. Points = 1 Arial photo showing buffers	Figure2
Н 2.2	Corridors and Connections (see p. 81) H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft. wide, has at least a 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (Dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor). YES = 4 points (go to H 2.3) NO = go to H 2.2.2 H. 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50 ft. wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? OR a Lakefringe wetland, if it does not have an undisturbed corridor as in the question above? YES = 2 points (go to H 2.3) NO = go to H 2.2.3 H. 2.2.3 Is the wetland: Within 5 mi (8km) of a brackish or salt water estuary OR Within 3 miles of a large field or pasture (> 40 acres) OR YES = 1 point	1

- H 2.1: The actively managed forestlands surrounding Wetland F do not meet the definition of "relatively undisturbed". Disturbance includes access roads, un-reclaimed coal strip mines, managed forest lands, dense populations of invasive vegetation (e.g., Himalayan blackberry and Scotch broom), recent grading actions associated with the partial fill of Trench F, et cetera.
- H 2.2: Wetland B is not part of a relatively undisturbed and unbroken vegetated corridor. The nearest brackish or saltwater estuary would be greater than 20 miles away. Wetland B is located within approximately 0.5-mile of Lake No. 12, which is greater than 20 acres in size and considered a Shoreline of the State.

u	Total Score for Habitat Functions Add the points for H 1 and H 2; then <i>record the result on p. 1</i>	15
	TOTAL for H 1 from page 8	5
	H 2 TOTAL Score – opportunity for providing habitat Add the scores from H2.1, H2.2, H2.3, H2.4	
		10
	 There is at least 1 wetland within 1/2 mile	
	within 1/2 mile	
	• The wetland fringe on a lake with disturbance and there are 3 other lake-fringe wetlands	
	disturbedpoints = 3	
	• There are at least 3 other wetlands within 1/2 mile, BUT the connections between them are	3
	• The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within 1/2 mile	
	but connections should NOT be bisected by paved roads, fill, fields, or other development points = 5	
	relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating,	
	H 2.4 Wetland Landscape: Choose the one description of the landscape around the wetland that best fits (see p. 84) There are at least 3 other wetlands within 1/2 mile, and the connections between them are	
	addressed in question H 2.4) H 2.4 Westland Landscape, Chasse the one description of the landscape ground the westland that heat fits (see p. 84)	
	Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are	
	If wetland has 1 priority habitat = 1 point No habitats = 0 points	
	If wetland has 3 or more priority habitats = 4 points If wetland has 2 priority habitats = 3 points	
	diameter at the largest end, and > 6 m (20 ft) long. If wetland has 3 or more priority habitats = 4 points	
	51 cm (20 in) in western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30 cm (12 in) in	
	characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of >	
	X Snags and Logs: Trees are considered snags if they are dead or dying and exhibit sufficient decay	
	Talus: Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.	
	Cliffs: Greater than 7.6 m (25 ft) high and occurring below 5000 ft.	
	rock, ice, or other geological formations and is large enough to contain a human.	
	Caves: A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils,	
	and Puget Sound Nearshore. (full descriptions of habitats and the definition of relatively undisturbed are in WDFW report: pp. 167-169 and glossary in Appendix A).	
	Nearshore: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore,	
	provide functional life history requirements for instream fish and wildlife resources.	
	X Instream: The combination of physical, biological, and chemical processes and conditions that interact to	•
	a wet prairie (full descriptions in WDFW PHS report p. 161).	4
	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	
	X Riparian: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and	
	oak component is important (full descriptions in WDFW PHS report p. 158).	
	Oregon white Oak: Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the	
	cover may be less that 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.	
	dbh or > 200 years of age. (Mature forests) Stands with average diameters exceeding 53 cm (21 in) dbh; crown	
	multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in)	
	Old-growth/Mature forests: (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a	
	Herbaceous Balds: Variable size patches of grass and forbs on shallow soils over bedrock.	
	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 p. 152).	
	Aspen Stands: Pure or mixed stands of aspen greater than 0.4 ha (1 acre).	
	NOTE: the connections do not have to be relatively undisturbed.	
	Which of the following priority habitats are within 330 ft. (100m) of the wetland unit?	
	descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report http://wdfw.wa.gov/hab/phslist.htm)	
	H 2.3 Near or adjacent to other priority habitats listed by WDFW (see p. 82): (see new and complete	
	TYPE AND THE SECOND SEC	

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

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

	Wetland Type – Check off any criteria that apply to the wetland. Circle the Category when the appropriate	
ı	criteria are met.	
SC1	Estuarine wetlands? (see p.86)	
	Does the wetland unit meet the following criteria for Estuarine wetlands?	
	The dominant water regime is tidal,	
	Vegetated, and	
	With a salinity greater than 0.5 ppt.	
	$\mathbf{YES} = \mathbf{Go} \text{ to } \mathbf{SC} 1.1 \qquad \mathbf{NO} \underline{\mathbf{X}}$	
	SC 1.1 Is the wetland unit 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? YES = Category I NO = go to SC 1.2	Cat. 1
	SC 1.2 Is the wetland at least 1 acre in size and meets at least two of the following conditions?	
	YES = Category I The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has	Cat. I
	less than 10% cover of non-native plant species. If the non-native <i>Spartina</i> spp, are only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II).	Cat. II
	The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category 1. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre.	Dual
	At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland	Rating I/II
	The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	1/11
SC2	Natural Heritage Wetlands (see p. 87)	
	Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as	
	either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or	
	Sensitive plant species.	
	SC 2.1 Is the wetland being rated in a Section/Township/Range that contains a natural heritage wetland? (This	
	question is used to screen out most sites before you need to contact WNHP/DNR.)	
	S/T/R information from Appendix D or accessed from WNHP/DNR web site	
	YES Contact WNHP/DNR (see p. 79) and go to SC 2.2 NO \underline{X}	
	SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as a site with state threatened	
	or endangered plant species?	Cat I
	YES = Category 1 NO \underline{X} not a Heritage Wetland	
CC2	Bogs (see p. 87)	
SC3	Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? Use	
	the key below to identify if the wetland is a bog. If you answer yes you will still need to rate the	
	wetland based on its function.	
	1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that	
	compose 16 inches or more of the first 32 inches of soil profile? (See Appendix B for a field key to identify organic soils)? YES = go to question 3 NO = go to question 2	
	2. Does the wetland have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or	
	pond? YES = go to question 3 NO = is not a bog for purpose of rating	
	3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present,	
	consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more	
	than 30% of the total shrub and herbaceous cover consists of species in Table 3)?	
	YES = Is a bog for purpose of rating NO = go to question 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" deep. If the pH is	
	less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog.	
	4. Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western	
	hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine. WITH any of	
	the species (or combination of species) on the bog species plant list in Table 3 as a significant	~ · =
	component of the ground cover (> 30% coverage of the total shrub/herbaceous cover)?	Cat. I
	YES = Category I NO = Is not a bog for purpose of rating	

SC4	Forested Wetlands (see p. 90)	
	Does the wetland have at least 1 acre of forest that meet one of these criteria for the Department of Fish	
	and Wildlife's forests as priority habitats? If you answer yes you will still need to rate the wetland	
	based on its function.	
	Old-growth forests: (west of Cascade Crest) Stands of at least two three species forming a	
	multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare)	
	that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm or	
	more).	
	NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees	
	in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW	
	criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter.	
	Mature forests: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old	
	OR have an average diameters (dbh) exceeding 21 inches (53 cm); 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.	Cat. I
	YES = Category I $NO = \underline{X}$ not a forested wetland with special characteristics	Cat. 1
SC5	Wetlands in Coastal Lagoons (see p. 91)	
	Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?	
	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 surface water that is saline or brackish (> 0.5	
	ppt) during most of the year in at least a portion of the lagoon (needs to be measured near the	
	bottom.)	
	$\mathbf{YES} = \mathbf{Go} \text{ to SC } 5.1 \qquad \mathbf{NO} \underline{\mathbf{X}} \text{ not a wetland in a coastal lagoon}$	
	SC 5.1 Does the wetland meet all of the following three conditions?	
	The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing) and has	
	less than 20% cover of invasive plant species (see list of invasive species on p. 74).	
	At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed	
	or un-mowed grassland.	Cat. I
	The wetland is larger than 1/10 acre (4350 square ft.)	
	YES = Category I NO = Category II	Cat. II
SC6	<u>Interdunal Wetlands</u> (see p. 93)	
	Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or	
	WBUO)?	
	YES = Go to SC 6.1 NO \underline{X} not an interdunal wetland for rating	
	If you answer yes you will still need to rate the wetland based on its functions.	
	In practical terms that means the following geographic areas:	
	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 	
	SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is one acre or larger?	
	YES = Category II $\mathbf{NO} = \mathbf{go}$ to SC 6.2	C-4 II
	SC 6.2 Is the wetland between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre?	Cat. II
	YES = Category III	Cot III
	Category of wetland based on Special Characteristics	Cat. III
	Choose the "highest" rating if wetland falls into several categories, and record on p. 1.	
u		
1	If you answered NO for all types enter "Not Applicable" on p. 1	

WETLAND RATING FORM - WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users Updated Oct. 2008 with the new WDFW definitions for priority habitats

Name of wetland (if known): Wetland G –	1042.0005: Ra	avensdale	D	ate of si	te visit: <u>12/05/</u>	17
Rated by: Emily Swaim/Richard Peel	Trained by	y Ecology? Yes <u>X</u>	No D	ate of tr	aining: <u>3/31/16</u>	5
SEC: 01 TWNSHP: 21N	RNGE:	: 06E Is	S/T/R in Appen	dix D?	Yes	No X
Map of wetland	ınit: Figure <u>1</u>		Estimated size 10	6 Acres		
	SUMM	ARY OF RATING	Ţ			
Category based on FUNCTIONS provide	d by wetland:	: II				
Category I = Score > 70		Score for Wat	er Quality Functi	ons	16	
Category II = Score 51 - 6	9	Score for H	lydrologic Functi	ons	16	
Category III = Score 30 – 5	0	Score f	or Habitat Functi	ons	22	
Category IV = Score < 30		TOTAL	Score for Functi	ons	54	
Category based on SPECIAL CHARACTE	RISTCS of W	etland Does no	t apply			
Final Ca	tegory (cho	pose the "highest" o	ategory from abo	ove")	II	
Summary of bas	ic informatio	on about the wetlan	nd unit.			
Wetland Unit has Sp			HGM Class			
Characteristics Estuarine		Depressional	r Rating	X		
Natural Heritage Wet	land	Riverine		Λ		

Summary of basic mior	mation	about the wetland unit.
Wetland Unit has Special		Wetland HGM Class
Characteristics		used for Rating
Estuarine		Depressional
Natural Heritage Wetland		Riverine
Bog		Lake-fringe
Mature Forest		Slope
Old Growth Forest		Flats
Coastal Lagoon		Freshwater Tidal
Interdunal		
None of the above	X	Check if unit has multiple HGM classes present

Does the wetland being rated meet any of the criteria below? If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

	Check List for Wetlands that Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1.	Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered animal or plant species (T/E species)? For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		X
SP2.	Has the wetland unit been documented as habitat for any State listed Threatened or Endangered animal species? For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category 1 Natural Heritage Wetlands (see p. 19 of data form).		X
SP3.	Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?		X
SP4.	Does the wetland unit have a local significance in addition to its functions? For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		X

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

$Wetland\ name\ or\ number-Wetland\ G$	

The hydrogeomorphic classification groups wetlands in to those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Classification of Vegetated Wetlands for Western Washington

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 (i.e. except during floods)?

1	NO – go to 2 YES – the wetland class is Tidal Fringe
(If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?
	YES – Freshwater Tidal Fringe NO – Saltwater Tidal Fringe (Estuarine)
	If your wetland can be classified as a Freshwater Tidal Fringe use the forms for Riverine wetlands. If it is a Saltwater Tidal Fringe it
	is rated as an Estuarine wetland. Wetlands that were call estuarine in the first and second editions of the rating system are called Salt
	Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and
	this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please
	note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p).
2.	The entire wetland unit is flat and precipitation is 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 meet both of the following criteria?
	The vegetated part of the wetland is on the shores of a body of permanent open water (without any
	vegetation on the surface) where at least 20 acres (8ha) in size;
	At least 30% of the open water area is deeper than 6.6 (2 m)?
	NO – go to 4 YES – The wetland class is Lake-fringe (Lacustrine Fringe)
4.	Does the entire wetland 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?
	NOTE: Surface water does not pond in these types of wetlands except occasionally in very small and
	shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 foot deep).
	(NO – go to 5) YES – The wetland class is Slope
5.	Does the entire wetland 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 two years.
	NOTE. The riverine unit can contain depressions that are filled with water when the river is not flooding
	NO – go to 6 YES – The wetland class is Riverine
6.	Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time of
	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 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 your wetland. 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 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	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of	Treat as ESTUARINE under wetlands with special
freshwater wetland	characteristics

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

D	Depressional and Flat Wetlands	Points
	WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.	(only 1 score
D 1	Does the wetland have the potential to improve water quality?	per box) (see p.38)
D I	D 1.1 Characteristics of surface water flows out of the wetland:	
	 Unit is a depression with no surface water leaving it (no outlet)	Figure
	Unit has an unconstricted, or slightly constricted, surface outlet (permanently flowing) points = 1 Unit is a "flat" depression (Q.7 on key), or in the Flats class, with permanent surface	1
	outflow and no obvious natural outlet and/or outlet is a man-made ditch	1
	D 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic (use NRCS definitions) YES points = 4 NO points = 0	4
	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class):	т.
	 Wetland has persistent, ungrazed vegetation > = 95% of area	Figure
	• Wetland has persistent, ungrazed vegetation > = 1/10 of area	3
	• Wetland has persistent, ungrazed vegetation < 1/10 of area	
	D 1.4 Characteristics of seasonal ponding or inundation: This is the area of the wetland that is ponded for at	Figure 3
	least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 years.	
	Area seasonally ponded is > 1/2 total area of wetland	0
	 Area seasonally ponded is > 1/4 total area of wetland	
	Map of Hydroperiods	
	Total for D 1 Add the points in the boxes above	8
D 2	Does the wetland have the opportunity to improve water quality?	(see p. 44)
	Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient	
	from the wetland? Note which of the following conditions provide the sources of pollutants. A unit	
	may have pollutants coming from several sources, but any single source would qualify as opportunity.	
	Grazing in the wetland or within 150 ft Untreated stormwater discharges to wetland	
	Tilled fields or orchards within 150 ft. of wetland	
	A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed	
	fields, roads, or clear-cut logging Residential, urban areas, golf courses are within 150 ft. of wetland	Multiplier
	Wetland is fed by groundwater high in phosphorus or nitrogen	2
	X Other Forest practices within 150 feet of wetland	
-	YES multiplier is 2 NO multiplier is 1 TOTAL Water Oraclity Functions Multiply the search from D1 by D2, then add search table on a 1	16
u	TOTAL – Water Quality Functions Multiply the score from D1 by D2; then <i>add score to table on p. 1</i> HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation.	10
D 3		(see p.46)
D 3	D 3.1 Characteristics of surface water flows out of the wetland unit	(see pire)
	· Unit is a depression with no surface water leaving it (no outlet) points = 4	
	Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2 Unit is a "flat" depression (Q.7 on key) or in the Flats class, with permanent surface	0
	outflow and no obvious natural outlet and/or outlet is a man-made ditch	U
	(If ditch is not permanently flowing treat unit as "intermittently flowing")	
	Unit has an unconstricted, or slightly constricted, surface outlet (permanently flowing) points = 0	
	1 11 3 / Henth of Storage dilring Wet periods - Estimate the helght of honding above the hottom of the outlet - For	
	D 3.2 Depth of storage during wet periods. Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry).	
	units with no outlet measure from the surface of permanent water or deepest part (if dry). Marks of ponding are 3 ft. or more above the surface or bottom of the outlet points = 7	
	units with no outlet measure from the surface of permanent water or deepest part (if dry). Marks of ponding are 3 ft. or more above the surface or bottom of the outlet	5
	units with no outlet measure from the surface of permanent water or deepest part (if dry). • Marks of ponding are 3 ft. or more above the surface or bottom of the outlet	5
	units with no outlet measure from the surface of permanent water or deepest part (if dry). • Marks of ponding are 3 ft. or more above the surface or bottom of the outlet	5
	units with no outlet measure from the surface of permanent water or deepest part (if dry). • Marks of ponding are 3 ft. or more above the surface or bottom of the outlet	5
	 units with no outlet measure from the surface of permanent water or deepest part (if dry). Marks of ponding are 3 ft. or more above the surface or bottom of the outlet points = 7 The wetland is a "headwater" wetland points = 5 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 Wetland is flat (yes to Q.2 or Q.7 on key)but has small depressions on the surface that trap water points = 1 Marks of ponding less than 0.5 ft. points = 0 D 3.3 Contribution of wetland unit 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. 	5
	 units with no outlet measure from the surface of permanent water or deepest part (if dry). Marks of ponding are 3 ft. or more above the surface or bottom of the outlet points = 7 The wetland is a "headwater" wetland points = 5 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 Wetland is flat (yes to Q.2 or Q.7 on key)but has small depressions on the surface that trap water points = 1 Marks of ponding less than 0.5 ft. points = 0 D 3.3 Contribution of wetland unit 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 unit points = 5 	3
	 units with no outlet measure from the surface of permanent water or deepest part (if dry). Marks of ponding are 3 ft. or more above the surface or bottom of the outlet points = 7 The wetland is a "headwater" wetland points = 5 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 Wetland is flat (yes to Q.2 or Q.7 on key)but has small depressions on the surface that trap water points = 1 Marks of ponding less than 0.5 ft. points = 0 D 3.3 Contribution of wetland unit 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. 	
	units with no outlet measure from the surface of permanent water or deepest part (if dry). • Marks of ponding are 3 ft. or more above the surface or bottom of the outlet	3

D 4	Does the wetland have the opportunity to reduce flooding and erosion?	(see p. 49)
	Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity,	
	it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide	
	gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from	
	groundwater in areas where damaging groundwater flooding does not occur. <i>Note which of the following indicators of opportunity apply.</i>	
	Wetland is in a headwater of a river or stream that has flooding problems.	
	Wetland drains to a river or stream that has flooding problems	Multiplier
	Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems	2
	X Other Holds significant water due to large wetland size and ponded area.	
	YES multiplier is 2 NO multiplier is 1	
u	TOTAL – Hydrologic Functions Multiply the score from D3 by D4; then <i>add score to table on p. 1</i>	16

D 1.4: The majority of Wetland G (greater than 90 percent) exhibits permanent ponding.

D 4: A multiplier of 2 is conservatively applied due to the large wetland size and large amount of permanent ponding. In fact, the outlet for Wetland G, "Ravensdale Creek", flows subsurface through a mined-out pit before reaching any downstream area with documented flooding problems.

	These questions apply to wetlands of all HGM classes.		Points
	HABIT	TAT FUNCTIONS – Indicators that wetland functions to provide important habitat.	(only 1 sec per box)
H 1	Does tl	he wetland have the potential to provide habitat for many species?	
	H 1.1	Vegetation structure (see P. 72):	Figure 1
	H 1.2	2 structurespoints = 1 Hydroperiods (see p.73): Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or 1/4 acre to count (see text for descriptions of hydroperiods). X Permanently flooded or inundated Seasonally flooded or inundated Occasionally flooded or inundated Y Saturated only X Permanently flowing stream or river in, or adjacent to, the wetland Seasonally flowing stream in, or adjacent to, the wetland Lake-fringe wetland	Figure 2
		Freshwater tidal wetland 2 points Map of hydroperiods	
	Н 1.3	Richness of Plant Species (see p. 75): 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) You do not have to name the species. Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle. If you counted: > 19 speciespoints = 2 5 - 19 speciespoints = 1 List species below if you want to: < 5 speciespoints = 0	2
	Н 1.4	Interspersion of Habitats (see p. 76): Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.	
		Note: If you have 4 or more classes	Figure
		None = 0 points Low = 1 point Moderate = 2 points Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always "high".	Figure 2
	(None = 0 points Low = 1 point Moderate = 2 points or 3 vegetation classes and open water, the rating is always "high". Use map of Cowardin classes.	
	H 1.5	None = 0 points Low = 1 point Moderate = 2 points or 3 vegetation classes and open water, the rating is always "high". Use map of Cowardin classes.	2

H 2	Does t	he wetland have the opportunity to provide habitat for many species?	(only 1 score per box)
	H 2.1	Buffers (see P. 80): Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed". 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% of circumference. No structures are within the undisturbed part of buffer (relatively undisturbed also means no grazing, no landscaping, no daily human use). points = 5 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. points = 4 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference. points = 4 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference. points = 3 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. points = 3 If buffer does not meet any of the criteria above: X No paved areas (except paved trails) or buildings within 25m (80 ft) of wetland > 95% circumference. Light to moderate grazing or lawns are OK. points = 2 No paved areas of buildings within 50m of wetland for > 50% circumference. Light to moderate grazing or lawns are OK. points = 1 Vegetated buffers are < 2m wide (6.6 ft) for more than 95% circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland)points = 0 Buffer does not meet any of the criteria above. Points = 1 Arial photo showing buffers	Figure 2
	Н 2.2	Corridors and Connections (see p. 81) H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft. wide, has at least a 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (Dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor). YES = 4 points (go to H 2.3) NO = go to H 2.2.2 H. 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50 ft. wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? OR a Lakefringe wetland, if it does not have an undisturbed corridor as in the question above? YES = 2 points (go to H 2.3) NO = go to H 2.2.3 H. 2.2.3 Is the wetland: Within 5 mi (8km) of a brackish or salt water estuary OR Within 3 miles of a large field or pasture (> 40 acres) OR West = 1 point NO = 0 points	2

- H 2.1: The actively managed forestlands surrounding Wetland G do not meet the definition of "relatively undisturbed" for greater than 50 percent of the circumference for at least 50 meters. Disturbance includes access roads, un-reclaimed coal strip mines, managed forest lands, dense populations of invasive vegetation (e.g., Himalayan blackberry and Scotch broom), et cetera.
- H 2.2: To the southeast of Wetland G, the land appears to meet the definition of a relatively undisturbed and unbroken vegetated corridor that connects to about 25 acres of relatively undisturbed land, as this area has not been logged recently. [This relatively undisturbed area does not meet the thresholds under H 2.1]

- - - - - - N	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). X. 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: pp. 167-169 and glossary in Appendix A). 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 7.6 m (25 ft) high and occurring below 5000 ft. Talus: Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs. X. 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 > 51 cm (20 in) in western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30 cm (12 in) in diameter at the largest end, and > 6 m (20 ft) long. If wetland has 2 priority habitats = 4 points If wetland has 2 priority habitats = 3 points If wetland has 2 priority habitats = 3 points If wetland has 2 priority habitats = 3 points If wetland has 2 priority habitats = 4 points Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4) H 2.4 Wetland Landscape: Choose the one description of the landscape around the wetland that best fits (see p. 84) There are at least 3 other wetland	3
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- - -	a wet prairie (full descriptions in WDFW PHS report p. 161). X 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: pp. 167-169 and glossary in Appendix A). 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 7.6 m (25 ft) high and occurring below 5000 ft.	4
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-	a wet prairie (full descriptions in WDFW PHS report p. 161).	4
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-		
	terrestrial ecosystems which mutually influence each other.	
	X Riparian: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and	
-	Oregon white Oak: Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (<i>full descriptions in WDFW PHS report p. 158</i>).	
	generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest.	
	cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is	
	dbh or > 200 years of age. (Mature forests) Stands with average diameters exceeding 53 cm (21 in) dbh; crown	
-	multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in)	
-	Old-growth/Mature forests: (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a	
	fish and wildlife (full descriptions in WDFW PHS report p. 152). Herbaceous Balds: Variable size patches of grass and forbs on shallow soils over bedrock.	
-	Biodiversity Areas and Corridors: Areas of habitat that are relatively important to various species of native	
_	Aspen Stands: Pure or mixed stands of aspen greater than 0.4 ha (1 acre).	
	NOTE: the connections do not have to be relatively undisturbed.	
	Which of the following priority habitats are within 330 ft. (100m) of the wetland unit?	
	descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report http://wdfw.wa.gov/hab/phslist.htm)	
1	H 2.3 Near or adjacent to other priority habitats listed by WDFW (see p. 82): (see new and complete	

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

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

	Wetland Type – Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.					
SC1	Estuarine wetlands? (see p.86)					
SCI	Does the wetland unit meet the following criteria for Estuarine wetlands?					
	The dominant water regime is tidal,					
	Vegetated, and					
	With a salinity greater than 0.5 ppt.					
	$\mathbf{YES} = \mathbf{Go} \text{ to } \mathbf{SC} 1.1 \qquad \mathbf{NO} \underline{\mathbf{X}}$					
	SC 1.1 Is the wetland unit 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? YES = Category I NO = go to SC 1.2	Cat. 1				
	SC 1.2 Is the wetland at least 1 acre in size and meets at least two of the following conditions?					
	YES = Category I NO = Category II	Cat. I				
	The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native Spartina spp, are only species					
	that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category 1. Do not, however, exclude the area of Spartina in	Cat. II				
	determining the size threshold of 1 acre.	Dual				
	At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed	Rating				
	or un-mowed grassland The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	I/II				
SC2	Natural Heritage Wetlands (see p. 87)					
	Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as					
	either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or					
	Sensitive plant species.					
	SC 2.1 Is the wetland being rated in a Section/Township/Range that contains a natural heritage wetland? (This					
	question is used to screen out most sites before you need to contact WNHP/DNR.) S/T/R information from Appendix D or accessed from WNHP/DNR web site YES Contact WNHP/DNR (see p. 79) and go to SC 2.2 NO X					
	SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as a site with state threatened					
	or endangered plant species?	Cat I				
	YES = Category 1 NO \underline{X} not a Heritage Wetland					
SC3	Bogs (see p. 87)					
	Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? Use the key below to identify if the wetland is a bog. If you answer yes you will still need to rate the wetland based on its function.					
	1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of soil profile? (See Appendix B for a field key to identify organic soils)? YES = go to question 3 NO = go to question 2					
	2. Does the wetland have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or					
	pond? YES = go to question 3 NO = is not a bog for purpose of rating 3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? YES = Is a bog for purpose of rating NO = go to question 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" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog. 4. Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine. WITH any of					
	the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover (> 30% coverage of the total shrub/herbaceous cover)? YES = Category I NO = Is not a bog for purpose of rating	Cat. I				

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SC4	Forested Wetlands (see p. 90)					
~ -	Does the wetland have at least 1 acre of forest that meet one of these criteria for the Department of Fish					
	and Wildlife's forests as priority habitats? If you answer yes you will still need to rate the wetland					
	based on its function.					
	Old-growth forests: (west of Cascade Crest) Stands of at least two three species forming a					
	multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare)					
	that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm or					
	more).					
	NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees					
	in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW					
	criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter.					
	Mature forests: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old					
	OR have an average diameters (dbh) exceeding 21 inches (53 cm); 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.	Cat. I				
	YES = Category I $NO = \underline{X}$ not a forested wetland with special characteristics	Cat. I				
0.05	Wetlands in Coastal Lagoons (see p. 91)					
SC5	Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?					
	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 surface water that is saline or brackish (> 0.5					
	ppt) during most of the year in at least a portion of the lagoon (needs to be measured near the					
	bottom.) VES = Go to SC 5.1 NO. Y. not a watland in a coastal largoon					
	YES = Go to SC 5.1 NO \underline{X} not a wetland in a coastal lagoon					
	SC 5.1 Does the wetland meet all of the following three conditions? The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing) and has					
	less than 20% cover of invasive plant species (see list of invasive species on p. 74).					
	At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed					
	or un-mowed grassland. The wetland is larger than 1/10 acre (4350 square ft.)					
	The wetland is larger than 1/10 acre (4350 square ft.)					
	YES = Category I NO = Category II	Cat. II				
SC6	Interdunal Wetlands (see p. 93)					
	Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or					
	WBUO)?					
	YES = Go to SC 6.1 NO \underline{X} not an interdunal wetland for rating					
	If you answer yes you will still need to rate the wetland based on its functions.					
	In practical terms that means the following geographic areas:					
	 Long Beach Peninsula lands west of SR 103 Grayland-Westport lands west of SR 105 					
	• Grayland-Westport lands west of SR 105 • Ocean Shores-Copalis – lands west of SR 115 and SR 109					
	SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is one acre or larger?					
	$YES = Category II \qquad NO = go to SC 6.2$	Cat. II				
	SC 6.2 Is the wetland between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre?	Cat. II				
	YES = Category III	Cat. III				
	Category of wetland based on Special Characteristics	Out. 111				
u	Choose the "highest" rating if wetland falls into several categories, and record on p. 1.					
	If you answered NO for all types enter "Not Applicable" on p. 1					
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WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users Updated Oct. 2008 with the new WDFW definitions for priority habitats

Name of wetland (if known): Wetland H – 104	12.0005: Ray	vensdale	D	ate of s	ite visit: <u>12/05</u>	5/17
Rated by: Emily Swaim/Richard Peel	Trained by	Ecology? Yes X	No D	ate of tı	raining: <u>3/31/1</u>	.6
SEC: 01 TWNSHP: 21N	RNGE: (06E Is	S/T/R in Appen	dix D?	Yes	No X
Map of wetland unit:	Figure 1	E	stimated size <u>0.5</u>	50 Acres	<u>s</u>	
	SUMMA	ARY OF RATING				
Category based on FUNCTIONS provided b	y wetland:	III				
Category I = Score > 70		Score for Wate	er Quality Functi	ons	8	
Category II = Score 51 - 69		Score for H	ydrologic Functi	ons	6	
Category III = Score 30 – 50		Score fo	or Habitat Functi	ons	19	
Category IV = Score < 30		TOTAL	Score for Functi	ons	33	
Category based on SPECIAL CHARACTERIS	STCS of We	tland Does not	apply			
Final Cates	gory (choo	ose the "highest" ca	ategory from abo	ove")	III	
Summary of basic i	nformation	about the wetlan	d unit.		•	
Wetland Unit has Speci	al		IGM Class			
Characteristics			r Rating	37		
				X		
Estuarine Natural Heritage Wetland	d	Depressional Riverine		X		

Summary of basic mior	шаноп	about the wetianu unit.
Wetland Unit has Special		Wetland HGM Class
Characteristics		used for Rating
Estuarine		Depressional
Natural Heritage Wetland		Riverine
Bog		Lake-fringe
Mature Forest		Slope
Old Growth Forest		Flats
Coastal Lagoon		Freshwater Tidal
Interdunal		
None of the above	X	Check if unit has multiple HGM classes present

Does the wetland being rated meet any of the criteria below? If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

	Check List for Wetlands that Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1.	Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered animal or plant species (T/E species)? For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		X
SP2.	Has the wetland unit been documented as habitat for any State listed Threatened or Endangered animal species? For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category 1 Natural Heritage Wetlands (see p. 19 of data form).		X
SP3.	Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?		X
SP4.	Does the wetland unit have a local significance in addition to its functions? For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		X

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands in to those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Classification of Vegetated Wetlands for Western Washington

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 (i.e. except during floods)? NO – go to 2 YES – the wetland class is Tidal Fringe
	If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?
	YES – Freshwater Tidal Fringe NO – Saltwater Tidal Fringe (Estuarine) If your wetland can be classified as a Freshwater Tidal Fringe use the forms for Riverine wetlands. If it is a Saltwater Tidal Fringe it
	is rated as an Estuarine wetland. Wetlands that were call estuarine in the first and second editions of the rating system are called Salt
	Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and
	this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please
	note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p).
2.	The entire wetland unit is flat and precipitation is 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 meet both of the following criteria?
	The vegetated part of the wetland is on the shores of a body of permanent open water (without any
	vegetation on the surface) where at least 20 acres (8ha) in size;
	At least 30% of the open water area is deeper than 6.6 (2 m)? NO – go to 4 YES – The wetland class is Lake-fringe (Lacustrine Fringe)
4.	Does the entire wetland 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?
	NOTE: Surface water does not pond in these types of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 foot deep).
	NO – go to 5 YES – The wetland class is Slope
5.	Does the entire wetland 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 two years. NOTE: The riverine unit can contain depressions that are filled with water when the river is not flooding
	NO – go to 6 YES – The wetland class is Riverine
6.	Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time of
	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 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
0.	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 your wetland. 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 class listed in column 2 is less
	The second condimitary restriction to 70 of more of the total area of the welland unit being fated. If the area of the class instea 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	Depressional				
Depressional + Lake-fringe	Depressional				
Salt Water Tidal Fringe and any other class of	Treat as ESTUARINE under wetlands with special				
freshwater wetland	characteristics				

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

	Depressional and Flat Wetlands	Points
	WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.	(only 1 score
D 1	Does the wetland have the <u>potential</u> to improve water quality?	per box) (see p.38)
υı	D 1.1 Characteristics of surface water flows out of the wetland:	(see p.50)
	· Unit is a depression with no surface water leaving it (no outlet) points = 3	Figure
	Unit has an intermittently flowing, OR highly constricted, permanently flowing outlet points = 2	
	Unit has an unconstricted, or slightly constricted, surface outlet (permanently flowing) points = 1 Unit is a "flat" depression (Q.7 on key), or in the Flats class, with permanent surface	1
	outflow and no obvious natural outlet and/or outlet is a man-made ditch points = 1	1
	(If ditch is not permanently flowing treat unit as "intermittently flowing") Provide photo or drawing	
	D 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic (use NRCS definitions) YES points = 4 NO points = 0	0
	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class):	
	• Wetland has persistent, ungrazed vegetation > = 95% of area	Figure 3
	Wetland has persistent, ungrazed vegetation > = 1/2 of area	3
	 Wetland has persistent, ungrazed vegetation > = 1/10 of area	
	Map of Cowardin vegetation classes	
	D 1.4 Characteristics of seasonal ponding or inundation: This is the area of the wetland that is ponded for at	Figure
	least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 years.	
	Area seasonally ponded is $> 1/2$ total area of wetland	0
	 Area seasonally ponded is > 1/4 total area of wetland	
	Map of Hydroperiods	
	Total for D 1 Add the points in the boxes above	4
D 2	Does the wetland have the opportunity to improve water quality?	(see p. 44)
_	Answer YES if you know or believe there are pollutants in groundwater or surface water coming into	, ,
	the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient	
	from the wetland? Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.	
	Grazing in the wetland or within 150 ft	
	 Untreated stormwater discharges to wetland Tilled fields or orchards within 150 ft. of wetland 	
	A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed	
	fields, roads, or clear-cut logging	Multiplion
	 Residential, urban areas, golf courses are within 150 ft. of wetland Wetland is fed by groundwater high in phosphorus or nitrogen 	Multiplier 2
	X Other Forest practices within 150 feet of wetland	
	YES multiplier is 2 NO multiplier is 1	
u	TOTAL – Water Quality Functions Multiply the score from D1 by D2; then add score to table on p. 1	8
	HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation.	1
D 3	Does the wetland have the <u>potential</u> to reduce flooding and erosion?	(see p.46)
	D 3.1 Characteristics of surface water flows out of the wetland unit	
	· Unit is a depression with no surface water leaving it (no outlet)	
	 Unit is a depression with no surface water leaving it (no outlet)	0
	 Unit is a depression with no surface water leaving it (no outlet)	
	 Unit is a depression with no surface water leaving it (no outlet)	
	 Unit is a depression with no surface water leaving it (no outlet)	0
	 Unit is a depression with no surface water leaving it (no outlet)	0
	 Unit is a depression with no surface water leaving it (no outlet)	0
	 Unit is a depression with no surface water leaving it (no outlet)	0
	 Unit is a depression with no surface water leaving it (no outlet)	0
	 Unit is a depression with no surface water leaving it (no outlet)	0
	 Unit is a depression with no surface water leaving it (no outlet)	0
	 Unit is a depression with no surface water leaving it (no outlet)	0
	 Unit is a depression with no surface water leaving it (no outlet)	3
	 Unit is a depression with no surface water leaving it (no outlet)	0
	 Unit is a depression with no surface water leaving it (no outlet)	3

D 4	Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from			
	groundwater in areas where damaging groundwater flooding does not occur. Note which of the following indicators of opportunity apply. Wetland is in a headwater of a river or stream that has flooding problems. Wetland drains to a river or stream that has flooding problems Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems Other			
	YES multiplier is 2 NO multiplier is 1			
u	TOTAL – Hydrologic Functions Multiply the score from D3 by D4; then <i>add score to table on p. 1</i>	6		

D 4: The outlet for Wetland H, "Ravensdale Creek", flows subsurface through a mined-out pit before reaching any downstream area with documented flooding problems.

R	Riverine and Freshwater Tidal Fringe Wetlands	Points
	WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.	(only 1 score per box)
R 1	Does the wetland have the <u>potential</u> to improve water quality? (see p.52)	
	R 1.1 Area of surface depressions within the riverine wetland that can trap sediments during a flooding event: Depressions cover > 3/4 area of wetland points = 8 Depressions cover > 1/2 area of wetland points = 4 (If depressions > 1/2 of area of unit draw polygons on aerial photo or map) Depressions present but cover < 1/2 area of wetland points = 2 No depressions present points = 0	Figure
	R 1.2 Characteristics of the vegetation in the unit (areas with >90% cover at person height): Trees or shrubs > 2/3 area of the unit	Figure
	Add the points in the boxes above	
R 2	Does the wetland have the opportunity to improve water quality? Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland. Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity. Grazing in the wetland or within 150 ft Untreated stormwater discharges to wetland Tilled fields or orchards within 150 ft. of wetland A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging	(see p. 53)
	Residential, urban areas, golf courses are within 150 ft. of wetland The river or stream linked to the wetland has a contributing basin where human activities have raised levels of sediment, toxic compounds or nutrients in the river water above standards for water quality. Other YES multiplier is 2 NO multiplier is 1	Multiplier
u	TOTAL – Water Quality Functions Multiply the score from R1 by R2; then add score to table on p. 1	
	HYDROLOGIC FUNCTIONS – Indicators that wetland functions to reduce flooding and stream erosion.	
R 3	Does the wetland have the <u>potential</u> to reduce flooding and erosion?	(see p.54)
	R 3.1 Characteristics of the overbank storage the wetland provides: 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 unit) / (average width of stream between banks). If the ratio is more than 20	Figure
	R 3.2 Characteristics of vegetation that slow down water velocities during floods: 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 NOT Cowardin classes): - Forest or shrub for > 1/3 area OR herbaceous plants > 2/3 area	Figure
D 4	Does the wetland have the opportunity to reduce flooding and erosion?	(see p.57)
R 4	Answer YES if the wetland is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Note which of the following conditions apply. There are human structures and activities downstream (roads, buildings, bridges, farms) that can be damaged by flooding. There are natural resources downstream (e.g. salmon redds) that can be damaged by flooding Other (Answer NO if the major source of water to the wetland is controlled by a reservoir or the wetland is tidal fringe along the sides of a dike) YES multiplier is 2 NO multiplier is 1	
	TOTAL – Hydrologic Functions Multiply the score from R3 by R4: then add score to table on n. 1	

L	Lake-fringe Wetlands	Points
	WATER QUALITY FUNCTIONS – Indicators that the wetland unit functions to improve water quality.	(only 1 score
L 1	Does the wetland unit have the <u>potential</u> to improve water quality? (see p.59)	per box)
	L 1.1 Average width of vegetation along the lakeshore (use polygons of Cowardin classes): Vegetation is more than 33 ft. (10m) wide	Figure
	L 1.2 Characteristics of the vegetation 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. NOTE: 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 vegetation that is not aquatic bed or herbaceous covers > 2/3 of the unit points = 3 Other vegetation that is not aquatic bed in > 1/3 vegetated area points = 1 Aquatic bed cover and open water > 2/3 of the unit points = 0 Map with polygons of different vegetation types	Figure
	Add the points in the boxes above	
L 2	Does the wetland have the opportunity to improve water quality? Answer YES if you know or believe there are pollutants in the lake water, or polluted surface water flowing through the unit to the lake. Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity. Wetland is along the shores of a lake or reservoir that does not meet water quality standards Grazing in the wetland or within 150 ft Polluted water discharges to wetland along upland edge Tilled fields or orchards within 150 ft. of wetland	(see p.61)
	Residential or urban areas are within 150 ft. of wetland Parks with grassy areas that are maintained, ballfields, golf courses (all within 150 ft. of lake shore) Power boats with gasoline or diesel engines use the lake Other YES multiplier is 2 NO multiplier is 1	Multiplier
u	TOTAL – Water Quality Functions Multiply the score from L1 by L2; then add score to table on p. 1	
	HYDROLOGIC FUNCTIONS – Indicators that wetland functions to reduce shoreline erosion.	
L 3	Does the wetland have the potential to reduce shoreline erosion?	(see p.62)
	L 3 Average width and characteristics of vegetation along the lakeshore (do not include aquatic bed): (choose the highest scoring description that matches conditions in the wetland) 3/4 of distance is shrubs or forest at least 33 ft. (10m) wide	Figure
	• Vegetation is at least of it. (2m) wide (any type except aquatic bed)	
T 4	Record the points in the boxes above	(222 - 61)
L 4	Does the wetland have the opportunity to reduce erosion? Are there features along the shore that will be impacted if the shoreline erodes? Note which of the following conditions apply. There are human structures and activities along the upland edge of the wetland (buildings, fields) that can be damaged by erosion. There are undisturbed natural resources along the upland edge of the wetland (e.g. mature forests, other wetlands) that can be damaged by shoreline erosion. Other	(see p. 64) Multiplier
	YES multiplier is 2 NO multiplier is 1	
u	TOTAL – Hydrologic Functions Multiply the score from L3 by L4; then add score to table on p. 1	1

S	Slope Wetlands	Points
	WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.	(only 1 score per box)
S 1	Does the wetland have the <u>potential</u> to improve water quality?	(see p.64)
	S 1.1 Characteristics of average slope of unit: Slope is 1% or less (a 1% slope has a 1 ft. vertical drop in elevation for every 100 ft. horizontal distance). points = 3 Slope is 1% - 2% points = 2 Slope is 2% - 5% points = 1 Slope is greater than 5% points = 0	
	S 1.2 The soil 2 inches below the surface (or duff layer) is clay, organic (<i>Use NRCS definitions</i>).	
	YES = 3 points NO = 0 points S 1.3 Characteristics of the vegetation in the wetland that trap sediments and pollutants: Choose the points	
	appropriate for the description that best fits the vegetation in the wetland. Dense vegetation means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 inches. Dense, uncut, herbaceous vegetation > 90% of the wetland area points = 6 Dense, uncut, herbaceous vegetation > 1/2 of area points = 3 Dense, woody, vegetation > 1/2 of area points = 2 Dense, uncut, herbaceous vegetation > 1/4 of area points = 1 Does not meet any of the criteria above for vegetation points = 0	Figure
	Aerial photo or map with vegetation polygons	
	Total for S 1 Add the points in the boxes above	
S 2	Does the wetland have the <u>opportunity</u> to improve water quality? Answer YES if you know or believe there are pollutants in groundwater or surface water coming into	(see p. 67)
	the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity. Grazing in the wetland or within 150 ft Untreated stormwater discharges to wetland	
	Tilled fields, logging, or orchards within 150 ft. of wetland Residential, urban areas, or golf courses are within 150 ft. upslope of wetland Other	Multiplier
	YES multiplier is 2 NO multiplier is 1	
u	TOTAL – Water Quality Functions Multiply the score from S1 by S2; then <i>add score to table on p. 1</i> HYDROLOGIC FUNCTIONS – Indicators that wetland functions to reduce flooding and stream erosion.	
S 3	Does the wetland have the <u>potential</u> to reduce flooding and stream erosion?	(see p.68)
33	S 3.1 Characteristics of vegetation that reduce the velocity of surface flows during storms: Choose the points appropriate for the description that best fits conditions in the wetland (stems of plants should be thick enough (usually > 1/8in), or dense enough to remain erect during surface flows). • Dense, uncut, rigid vegetation covers > 90% of the area of the wetland points = 6 • Dense, uncut, rigid vegetation > 1/2 area of wetland points = 3 • Dense, uncut, rigid vegetation > 1/4 area points = 1 • More than 1/4 of area is grazed, mowed, tilled, or vegetation is not rigid points = 0	(322)7.00)
	S 3.2 Characteristics of slope wetland that holds back small amounts of flood flows. The slope has small surface depressions that can retain water over at least 10% of its area. YES = 2 points NO = 0 points	
	Add the points in the boxes above	
S 4	Does the wetland have the opportunity to reduce flooding and erosion? Is the wetland in a landscape position where the reduction in water velocity it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows? Note which of the following conditions apply. Wetland has surface runoff that drains to a river or stream that has flooding problems	(see p. 70) Multiplier
	Other (Answer NO if the major source of water is controlled by a reservoir (e.g. wetland is a seep that is on the downstream side of a dam) YES multiplier is 2 NO multiplier is 1	
u	TOTAL – Hydrologic Functions Multiply the score from S3 by S4; then add score to table on p. 1	

Thes	re questions apply to wetlands of all HGM classes.	Points
	HABITAT FUNCTIONS – Indicators that wetland functions to provide important habitat.	(only 1 scor per box)
H 1	Does the wetland have the <u>potential</u> to provide habitat for many species?	
	H 1.1 Vegetation structure (see P. 72): Check the types of vegetation classes present (as defined by Cowardin) – Size threshold for each class of the area of unit is smaller than 2.5 acres. Aquatic Bed X Emergent plants X Scrub/shrub (areas where shrubs have > 30% cover) Forested (areas where trees have > 30% cover) If the unit has a forested class check if: 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. Add the number of vegetation types that qualify. If you have: 4 structures or morepoints = 4 3 structures	1
	H 1.2 Hydroperiods (see p.73): Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or 1/4 acre to count (see text for descriptions of hydroperiods). X Permanently flooded or inundated 4 or more types present points = 3 Seasonally flooded or inundated 3 or more types present points = 2 Occasionally flooded or inundated 2 types present points = 1 X Saturated only 1 type present points = 0 Permanently flowing stream or river in, or adjacent to, the wetland Seasonally flowing stream in, or adjacent to, the wetland Lake-fringe wetland	Figure 2
	H 1.3 Richness of Plant Species (see p. 75): 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) You do not have to name the species. Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle. If you counted: > 19 speciespoints = 2 5 - 19 speciespoints = 1 List species below if you want to: < 5 speciespoints = 0	
	H 1.4 Interspersion of Habitats (see p. 76): Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none. Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always "high". Use map of Cowardin classes	2
	H 1.5 Special Habitat Features (see p. 77): Check the habitat features that are present in the wetland. The number of checks is the number of poin you put into the next column. X Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft. long) X Standing snags (diameter at the bottom > 4 inches) in the wetland Undercut banks are present for at least 6.6 ft. (2m) and/or overhanging vegetation extends at least	
	3.3 ft. (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft. (10m) X 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 (cut shrubs or trees that have not yet turned grey/brown) At least 1/4 acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated (structures for egg-laying by amphibians) Invasive plants cover less than 25% of the wetland area in each stratum of plants NOTE: The 20% stated in early printings of the manual on page 78 is an error. H1 TOTAL Score – potential for providing habitat Add the points in the column above	3

Does	the wetland have the opportunity to provide habitat for many species?	(only 1 score per box)
H 2.1	Buffers (see P. 80): Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed". 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% of circumference. No structures are within the undisturbed price (relatively undisturbed also means no grazing, no landscaping, no daily human use). ———————————————————————————————————	Figure
H 2.2	Corridors and Connections (see p. 81) H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft. wide, has at least a 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (Dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor). YES = 4 points (go to H 2.3) NO = go to H 2.2.2 H. 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50 ft. wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? OR a Lakefringe wetland, if it does not have an undisturbed corridor as in the question above? YES = 2 points (go to H 2.3) NO = go to H 2.2.3 H. 2.2.3 Is the wetland: Within 5 mi (8km) of a brackish or salt water estuary OR Within 5 mi (8km) of a large field or pasture (> 40 acres) OR WES = 1 point NO = 0 points	0

- H 2.1: The land surrounding Wetland H appears to meet the definition of "relatively undisturbed" as the area along Ravensdale Creek has not been logged recently and access roads with associated disturbance are greater than 50 meters away for more than 50 percent of the circumference.
- H 2.2.2: Wetland H is not part of a relatively undisturbed and unbroken vegetated corridor that connects with at least 25 acres of undisturbed land. The undisturbed land is broken up by multiple access roads.
- H 2.2.3: The nearest brackish or saltwater estuary would be greater than 20 miles away. No 40-acre field or pastures have been identified within 3 miles. The nearest lake that is greater than 20 acres in size is Lake No. 12 which is greater than 1 mile away to the south.

	H 2.3 Near or adjacent to other priority habitats listed by WDFW (see p. 82): (see new and complete	
	descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report	
	http://wdfw.wa.gov/hab/phslist.htm)	
	Which of the following priority habitats are within 330 ft. (100m) of the wetland unit?	
	NOTE: the connections do not have to be relatively undisturbed.	
	Aspen Stands: Pure or mixed stands of aspen greater than 0.4 ha (1 acre).	
	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 p. 152).	
	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 20 trees/ha (8 trees/acre) > 81 cm (32 in)	
	dbh or > 200 years of age. (Mature forests) Stands with average diameters exceeding 53 cm (21 in) dbh; crown	
	cover may be less that 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: Woodlands 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).	
	X 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).	4
	X 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: pp. 167-169 and glossary in Appendix A).	
	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.	
	X Cliffs: Greater than 7.6 m (25 ft) high and occurring below 5000 ft.	
	Talus: Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt,	
	andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.	
	X 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 > 51 cm (20 in) in	
	western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30 cm (12 in) in diameter at the largest	
	end, and > 6 m (20 ft) long.	
	If wetland has 3 or more priority habitats = 4 points	
	If wetland has 2 priority habitats = 3 points	
	If wetland has 1 priority habitat = 1 point No habitats = 0 points	
	Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are	
	addressed in question H 2.4)	
	H 2.4 Wetland Landscape: Choose the one description of the landscape around the wetland that best fits (see p. 84)	
	There are at least 3 other wetlands within 1/2 mile, and the connections between them are	
	relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating,	
	but connections should NOT be bisected by paved roads, fill, fields, or other development points = 5	
	• The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe	
	wetlands within 1/2 mile	3
	· There are at least 3 other wetlands within 1/2 mile, BUT the connections between them are	3
	disturbedpoints = 3	
	· The wetland fringe on a lake with disturbance and there are 3 other lake-fringe wetlands	
	within 1/2 milepoints = 3	
	<u>'</u>	
	• There is at least 1 wetland within 1/2 mile	
	• There are no wetlands within 1/2 milepoints = 0	
	H 2 TOTAL Score – opportunity for providing habitat Add the scores from H2.1, H2.2, H2.3, H2.4	10
	TOTAL for H 1 from page 8	9
u	Total Score for Habitat Functions Add the points for H 1 and H 2; then record the result on p. 1	19

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

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

	Wetland Type – Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.				
SC1	Estuarine wetlands? (see p.86)				
SCI	Does the wetland unit meet the following criteria for Estuarine wetlands?				
	The dominant water regime is tidal,				
	Vegetated, and				
	With a salinity greater than 0.5 ppt. YES = Go to SC 1.1 NO X				
	_				
	SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC	Cat. 1			
	332-30-151? YES = Category I NO = go to SC 1.2	Cat. 1			
	SC 1.2 Is the wetland at least 1 acre in size and meets at least two of the following conditions?				
	YES = Category I NO = Category II	Cat. I			
	The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has	Cat. I			
	less than 10% cover of non-native plant species. If the non-native Spartina spp., are only species	Cat. II			
	that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh	Cu., 11			
	with native species would be a Category 1. Do not, however, exclude the area of Spartina in				
	determining the size threshold of 1 acre.	Dual			
	At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland	Rating			
	The wetland has at least 2 of the following features: tidal channels, depressions with open water,	I/II			
	or contiguous freshwater wetlands.				
SC2	Natural Heritage Wetlands (see p. 87) Natural Heritage Wetlands have been identified by the Weshington Natural Heritage Program/DNP of				
	Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or				
	Sensitive plant species.				
	SC 2.1 Is the wetland being rated in a Section/Township/Range that contains a natural heritage wetland? (<i>This</i>				
	question is used to screen out most sites before you need to contact WNHP/DNR.)				
	S/T/R information from Appendix D or accessed from WNHP/DNR web site				
	YES Contact WNHP/DNR (see p. 79) and go to SC 2.2 NO \underline{X}				
	SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as a site with state threatened				
	or endangered plant species?	Cat I			
	$\mathbf{YES} = \mathbf{Category 1} \qquad \qquad \mathbf{NO} \ \underline{\mathbf{X}} \qquad \text{not a Heritage Wetland}$				
SC3	Bogs (see p. 87) Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? Use				
	the key below to identify if the wetland is a bog. If you answer yes you will still need to rate the				
	wetland based on its function.				
	1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that				
	compose 16 inches or more of the first 32 inches of soil profile? (See Appendix B for a field key to				
	identify organic soils)? YES = go to question 3 \mathbf{NO} = go to question 2				
	2. Does the wetland have organic soils, either peats or mucks that are less than 16 inches deep over				
	bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? YES = go to question 3 NO = is not a bog for purpose of rating				
	pond? YES = go to question 3 NO = is not a bog for purpose of rating 3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present,				
	consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more				
	than 30% of the total shrub and herbaceous cover consists of species in Table 3)?				
	YES = Is a bog for purpose of rating $NO = go$ to question 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" deep. If the pH is				
	less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog.				
	4. Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western				
	hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine. WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant				
	component of the ground cover (> 30% coverage of the total shrub/herbaceous cover)?	Cat. I			
	YES = Category I $NO = Is \text{ not a bog for purpose of rating}$	Cal. I			

SC4	4 Forested Wetlands (see p. 90)						
	Does the wetland have at least 1 acre of forest that meet one of these criteria for the Department of Fish						
	and Wildlife's forests as priority habitats? If you answer yes you will still need to rate the wetland						
	based on its function.						
	Old-growth forests: (west of Cascade Crest) Stands of at least two three species forming a						
	multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare)						
	that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm or						
	more).						
	NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees						
	in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW						
	criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter.						
	Mature forests: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old						
	OR have an average diameters (dbh) exceeding 21 inches (53 cm); 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.	Cat. I					
	YES = Category I NO = \underline{X} not a forested wetland with special characteristics						
SC5	Wetlands in Coastal Lagoons (see p. 91)						
	Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?						
	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 surface water that is saline or brackish (> 0.5						
	ppt) during most of the year in at least a portion of the lagoon (needs to be measured near the						
	bottom.)						
	YES = Go to SC 5.1 NO \underline{X} not a wetland in a coastal lagoon						
	SC 5.1 Does the wetland meet all of the following three conditions?						
	The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing) and has						
	less than 20% cover of invasive plant species (see list of invasive species on p. 74).						
	At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed						
	or un-mowed grassland.						
	The wetland is larger than 1/10 acre (4350 square ft.)						
	YES = Category I NO = Category II	Cat. II					
SC6	Interdunal Wetlands (see p. 93)						
	Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or						
	WBUO)?						
	YES = Go to SC 6.1 NO \underline{X} not an interdunal wetland for rating						
	If you answer yes you will still need to rate the wetland based on its functions.						
	In practical terms that means the following geographic areas: 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						
	SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is one acre or larger?						
	YES = Category II $\mathbf{NO} = \mathbf{go} \text{ to SC } 6.2$	Cat. II					
	SC 6.2 Is the wetland between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre?						
	YES = Category III	Cat. III					
	Category of wetland based on Special Characteristics						
u							
	If you answered NO for all types enter "Not Applicable" on p. 1						

WETLAND RATING FORM - WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users Updated Oct. 2008 with the new WDFW definitions for priority habitats

Rated by: Emily Swaim/Richard Peel Trained by Ecology? Yes X No Date of training: 3/31/1	
SEC: 01 TWNSHP: 21N RNGE: 06E Is S/T/R in Appendix D? Yes	No X
Map of wetland unit: Figure 1 Estimated size 0.61 Acres	
SUMMARY OF RATING	
Category based on FUNCTIONS provided by wetland: IV	
Category I = Score > 70 Score for Water Quality Functions 2	
Category II = Score 51 - 69 Score for Hydrologic Functions 3	
Category III = Score 30 – 50 Score for Habitat Functions 11	
Category IV = Score < 30 TOTAL Score for Functions 16	
Category based on SPECIAL CHARACTERISTCS of Wetland Does not apply	
Final Category (choose the "highest" category from above")	
Summary of basic information about the wetland unit.	
Wetland Unit has Special Wetland HGM Class	
Characteristics used for Rating	
Estuarine Depressional X Natural Heritage Wetland Riverine	

Summary of basic information about the wetland unit.				
Wetland Unit has Special		Wetland HGM Class		
Characteristics		used for Rating		
Estuarine		Depressional	X	
Natural Heritage Wetland		Riverine		
Bog		Lake-fringe		
Mature Forest		Slope		
Old Growth Forest		Flats		
Coastal Lagoon		Freshwater Tidal		
Interdunal				
None of the above	X	Check if unit has multiple HGM classes present		

Does the wetland being rated meet any of the criteria below? If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

	Check List for Wetlands that Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1.	Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered animal or plant species (T/E species)? For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		X
SP2.	Has the wetland unit been documented as habitat for any State listed Threatened or Endangered animal species? For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category 1 Natural Heritage Wetlands (see p. 19 of data form).		X
SP3.	Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?		X
SP4.	Does the wetland unit have a local significance in addition to its functions? For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		X

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

Wetland name or number – Wetland I
The hydrogeomorphic classification groups wetlands in to those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Classification of Vegetated Wetlands for Western Washington

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 (i.e. except during floods)? NO – go to 2 YES – the wetland class is Tidal Fringe If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)? YES – Freshwater Tidal Fringe NO – Saltwater Tidal Fringe (Estuarine) If your wetland can be classified as a Freshwater Tidal Fringe use the forms for Riverine wetlands. If it is a Saltwater Tidal Fringe it is rated as an Estuarine wetland. Wetlands that were call estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p).
2.	The entire wetland unit is flat and precipitation is 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 meet both of the following criteria? The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) where at least 20 acres (8ha) in size; At least 30% of the open water area is deeper than 6.6 (2 m)? NO - go to 4 YES - The wetland class is Lake-fringe (Lacustrine Fringe)
4.	Does the entire wetland 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? NOTE: Surface water does not pond in these types of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 foot deep). NO - go to 5 YES - The wetland class is Slope
5.	Does the entire wetland 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 two years. NOTE: The riverine unit can contain depressions that are filled with water when the river is not flooding NO - go to 6 YES - The wetland class is Riverine
6.	Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time of 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 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 your wetland. 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 class listed in column 2 is less.

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	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of	Treat as ESTUARINE under wetlands with special
freshwater wetland	characteristics

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

than 10% of the unit, classify the wetland using the class that represents more than 90% of the total area.

MATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality. D 1 Does the wetland have the <u>potential</u> to improve water quality? D 1.1 Characteristics of surface water flows out of the wetland: Unit is a depression with no surface water leaving it (no outlet)	D	Depressional and Flat Wetlands	Points
Discription		•	(only 1 score
D 1.1 Characteristics of surface water flows out of the wetland:	D 1		1 * '
Unit is a depression with no surface water leaving it (no outlet)	ועו		
Unit has an unconstricted, or slightly constricted, surface outlet (perminently flowing)		· Unit is a depression with no surface water leaving it (no outlet)	Figure
outflow and no obvious natural outlet and/or outlet is a man-made ditch points = 1 (If ditch is not permanently flowing treat unit as "interminently flowing") Provide photo or drawing D1.2 The soil 2 inches below the surface (or duff layer) is clay or organic (use NRCS definitions) VES points = 4 NO points = 0 D1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class): Wetland has persistent, ungrazed vegetation > = 172 of area points = 3 Wetland has persistent, ungrazed vegetation > = 172 of area points = 3 Wetland has persistent, ungrazed vegetation > = 170 of area points = 1 Other of the Characteristics of seasonal ponding or inunation: This is the area of the whald that is permanently ponded. Estimate area as the average conditions Sout of 10 years. Area seasonally ponded is > 172 total area of wetland points = 2 Area seasonally ponded is > 174 total area of wetland points = 2 Area seasonally ponded is > 174 total area of wetland points = 2 Area seasonally ponded is > 174 total area of wetland points = 2 Area seasonally ponded is > 174 total area of wetland points = 2 Area seasonally ponded is > 174 total area of wetland points = 2 Area seasonally ponded is > 174 total area of wetland points = 2 Area seasonally ponded is > 174 total area of wetland points = 2 Area seasonally ponded is > 174 total area of wetland points = 2 Area seasonally ponded is > 174 total area of wetland points = 2 Area seasonally ponded is > 174 total area of wetland points = 2 Area seasonally ponded is > 174 total area of wetland points = 2 Area seasonally ponded is > 174 total area of wetland points = 2 Area seasonally ponded is > 174 total area of wetland points = 2 Area seasonally ponded is > 174 total area of wetland points = 2 Area seasonally ponded is > 174 total area of wetland points = 2 Area seasonally ponded is > 174 total area of wetland points = 2 Area seasonally ponded is > 174 total area of wetland points = 2 Area seasonally ponded is > 174 total area of wet		Unit has an unconstricted, or slightly constricted, surface outlet (permanently flowing) points = 1	
D1.2 The soil 2 inches below the surface (or duff layer) is clay or organic (use NRC selfinitions) O		Unit is a "flat" depression (Q.7 on key), or in the Flats class, with permanent surface	1
D1.2 The soil 2 inches below the surface (or duff layer) is clay or organic (use RRCS definitions) YES points = 4 NO points = 0		(If ditch is not permanently flowing treat unit as "intermittently flowing") Provide photo or drawing	
D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class):		D 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic (use NRCS definitions)	0
Wetland has persistent, ungrazed vegetation > = 195% of area			
Wetland has persistent, ungrazed vegetation >= 1/10 of area		Wetland has persistent, ungrazed vegetation > = 95% of area	Figure
Wetland has persistent, ungrazed vegetation < 1/10 of area. Map of Cowardin vegetation classes			0
Possible Discrete		• Wetland has persistent, ungrazed vegetation < 1/10 of area	
least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 years. Area seasonally ponded is > 1/2 total area of wetland		Map of Cowardin vegetation classes D 1 4 Characteristics of seasonal ponding or inundation: This is the area of the wetland that is pended for at	
Area seasonally ponded is > 1/2 total area of wetland points = 2 Area seasonally ponded is > 1/4 total area of wetland points = 2 Area seasonally ponded is < 1/4 total area of wetland points = 2 Area seasonally ponded is < 1/4 total area of wetland points = 0 D 2 Does the wetland have the opportunity to improve water quality? Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity. Grazing in the wetland or within 150 ft. of wetland Titled fields or orchards within 150 ft. of wetland A stream or culvert discharges to wetland Wetland is fed by groundwater high in phosphorus or nitrogen YES multiplier is 2 NO multiplier is 1 TOTAL – Water Quality Functions Multiply the score from D1 by D2; then add score to table on p. 1 HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation. D 3 Does the wetland have the potential to reduce flooding and erosion? D 3.1 Characteristics of surface water flows out of the wetland unit Unit is a depression with no surface water leaving it (no outlet). Unit has an intermittently flowing, OR highly constricted permanently flowing outlet. points = 4 Unit has a depression of the outlet and/or outlet is a man-made ditch. Unit has an unconstricted, or slightly constricted, surface outlet (permanently flowing) points = 0 D 3.2 Depth of storage during wet periods. Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry). Adarks of ponding less than 0.5 ft. or < 2 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 = 5 Marks		least 2 months, but dries out sometime during the year. Do not count the area that is permanently	Figure 3
Area seasonally ponded is > 1/4 total area of wetland points = 0 Area seasonally ponded is > 1/4 total area of wetland points = 0 Map of Hydroperiods Total for D 1 Add the points in the boxes above D 2 Does the wetland have the opportunity to improve water quality? Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland R Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity. Grazing in the wetland or within 150 ft. of wetland A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging Residential, urban areas, golf courses are within 150 ft. of wetland Wetland is fed by groundwater high in phosphorus or nitrogen X Other Forest practices within 150 feet of wetland YES multiplier is 2 No multiplier is 1 TOTAL - Water Quality Functions Multiply the score from D1 by D2; then add score to table on p. 1 P 3 Does the wetland have the potential to reduce flooding and crosion? D 3.1 Characteristics of surface water flows out of the wetland unit Unit is a depression with no surface water leaving it (no outlet). Unit is a "flat" depression (Q.7 on key) or in the Flats class, with permanent surface outflow and no obvious natural outlet and/or outlet is a man-made ditch. Unit has an intermittently flowing, OR highly constricted permanently flowing points = 0 D 3.2 Depth of storage during wet periods. Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry.). Marks of ponding are st flow of the wetland content is a man-made ditch. D 3.3 Contribution of wetland unit to storage in the watershed: Estimate the ratio of the area of pustream basin contributing surface water to bottom of outlet. Points = 5 Marks of ponding less than 0.5 ft. Marks of pondi		ponded. Estimate area as the average condition 5 out of 10 years. • Area seasonally ponded is > 1/2 total area of wetland	0
Total for D 1 Add the points in the boxes above D 2 Does the wetland have the opportunity to improve water quality? Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity. Grazing in the wetland or within 150 ft. of wetland Tilled fields or orchards within 150 ft. of wetland A stream or culvert discharges to wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging Residential, urban areas, golf courses are within 150 ft. of wetland Wet and is fed by groundwater high in phosphorus or nitrogen X Other Forest practices within 150 feet of wetland YES multiplier is 2 NO multiplier is 1 U TOTAL – Water Quality Functions Multiply the score from D1 by D2; then add score to table on p. 1 2 HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation. D 3.1 Characteristics of surface water flows out of the wetland unit Unit is a depression with no surface water leaving it (no outlet). Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2 Unit was an intermittently flowing, OR highly constricted permanently flowing) points = 0 D 3.2 Depth of storage during wet periods. Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry). Marks of ponding leve periods. Estimate the height of ponding above the bottom of the outlet. D 3.3 Contribution of wetland unit to storage in the height of ponding above the bottom of the outlet. Microsing a "headwater" wetland points = 5 Marks of ponding leven to the wetland to the area of the wetland unit		· Area seasonally ponded is > 1/4 total area of wetland	
D 2 Does the wetland have the opportunity to improve water quality? Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity. Grazing in the wetland or within 150 ft Untreated stormwater discharges to wetland Tilled fields or orchards within 150 ft of wetland A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging Residential, urban areas, golf courses are within 150 ft, of wetland Wetland is fed by groundwater high in phosphorus or nitrogen X Other Forest practices within 150 feet of wetland YES multiplier is 2 NO multiplier is 1 HYDROLOGIC FUNCTIONS Indicators that wetland unit functions to reduce flooding and stream degradation. D 3 Does the wetland have the potential to reduce flooding and erosion? D 3.1 Characteristics of surface water flows out of the wetland unit Unit is a depression with no surface water leaving it (no outlet). Unit is a "Ital" depression (Q.7 on key) or in the Flats class, with permanent surface outflow and no obvious natural outlet and/or outlet is a man-made ditch points = 1 (If ditch is not permanently flowing treat unit as "intermittently flowing"). Unit has an unconstricted, or slightly constricted, surface outlet (permanently flowing). D 3.2 Depth of storage during wet periods. Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry). Wetland is flat (yes to Q.2 or Q.7 on key) but as small depressions on the surface that trap water points = 5 Marks of ponding less than 0.5 ft. to < 2 ft. from surface or bottom of outlet. P 3.3 Contribution of wetland unit to s			
Does the wetland have the opportunity to improve water quality? Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity. Grazing in the wetland or within 150 ft. of wetland			1
Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity. Grazing in the wetland or within 150 ft Untreated stormwater discharges to wetland Tilled fields or orchards within 150 ft. of wetland A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging Residential, urban areas, golf courses are within 150 ft. of wetland Wetland is fed by groundwater high in phosphorus or nitrogen X Other Forest practices within 150 feet of wetland YES multiplier is 2 NO multiplier is 1 HYDROLOGIC FUNCTIONS Indicators that wetland unit functions to reduce flooding and stream degradation. D 3 Does the wetland have the potential to reduce flooding and erosion? D 3.1 Characteristics of surface water flows out of the wetland unit Unit is a depression with no surface water leaving it (no outlet). Unit is a depression with no surface water leaving it (no outlet). Unit is a depression with no surface water leaving it (no outlet). Unit is a depression (Q.7 on key) or in the Flats class, with permanent surface outlet (permanently flowing) points = 0 D 3.2 Depth of storage during wet periods. Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry). Marks of ponding are 3 ft. or more above the surface or bottom of outlet points = 5 Marks of ponding between 2 ft. to < 3 ft. from surface or bottom of outlet points = 5 Marks of ponding less than 0.5 ft points = 5 Marks of ponding less than 0.5 ft points = 5 The area of the basin is less than 10 times the area of the unit points = 5 The area of the b	D 2	Does the wetland have the opportunity to improve water quality?	(see p. 44)
from the wetland? Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity. Grazing in the wetland or within 150 ft. Untreated stormwater discharges to wetland Tilled fields or orchards within 150 ft. of wetland A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging Residential, urban areas, golf courses are within 150 ft. of wetland Wetland is fed by groundwater high in phosphorus or nitrogen Wetland is fed by groundwater high in phosphorus or nitrogen Wetland is fed by groundwater high in phosphorus or nitrogen Wetland Wetland is fed by groundwater high in phosphorus or nitrogen Wetland Wetland Wetland Wetland Wetland Wetland Wetland with in very seven from D1 by D2; then add score to table on p. I TOTAL - Water Quality Functions Multiplier is 2 HYDROLOGIC FUNCTIONS - Indicators that wetland unit functions to reduce flooding and stream degradation. D 3 Does the wetland have the potential to reduce flooding and erosion? D 3.1 Characteristics of surface water flows out of the wetland unit Unit is a depression with no surface water leaving it (no outlet) points = 4 Unit is a "flat" depression (Q.7 on key) or in the Flats class, with permanent surface outflow and no obvious natural outlet and/or outlet is a man-made ditch points = 0 D 3.2 Depth of storage during wet periods. Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry). Marks of ponding are 3 ft. or more above the surface or bottom of outlet points = 5 Marks of ponding between 2 ft. to < 3 ft. from surface or bottom of outlet points = 5 Marks of ponding between 2 ft. to < 3 ft. from surface or bottom of outlet points = 5 Marks of ponding less than 0.5 ft. D 3.3 Contribution of wetland unit to storage in the watershed: Estimate the ratio of		Answer YES if you know or believe there are pollutants in groundwater or surface water coming into	
may have pollutants coming from several sources, but any single source would qualify as opportunity. Grazing in the wetland or within 150 ft. Untreated stormwater discharges to wetland Tilled fields or orchards within 150 ft. of wetland A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging Residential, urban areas, golf courses are within 150 ft. of wetland Wetland is fed by groundwater high in phosphorus or nitrogen YES multiplier is 2 NO multiplier is 1 HYDROLOGIC FUNCTIONS — Indicators that wetland unit functions to reduce flooding and stream degradation. D 3.1 Characteristics of surface water flows out of the wetland unit Unit is a depression with no surface water leaving it (no outlet) points = 4 Unit is a "flat" depression (Q.7" on key) or in the Flats class, with permanent surface outflow and no obvious natural outlet and/or outlet is a man-made ditch points = 1 (If ditch is not permanently flowing proat unit as "intermittently flowing") Unit has an unconstricted, or slightly constricted, surface outlet (permanently flowing) points = 0 D 3.2 Depth of storage during wet periods. Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (If dry). Marks of ponding are 3 ft. or more above the surface or bottom of outlet. points = 5 Marks of ponding between 2 ft. to < 3 ft. from surface or bottom of outlet. points = 5 Marks of ponding between 2 ft. to < 3 ft. from surface or bottom of outlet. points = 5 Marks of ponding less than 0.5 ft points = 0 D 3.3 Contribution of wetland unit 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 The area of the basin is less than 10 times the area of the unit. points = 5 Entire unit is		from the wetland? Note which of the following conditions provide the sources of pollutants. A unit	
Untreated stormwater discharges to wetland Tilled fields or orchards within 150 ft. of wetland A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging Residential, urban areas, golf courses are within 150 ft. of wetland Wetland is fed by groundwater high in phosphorus or nitrogen YES multiplier is 2 NO multiplier is 1 ### TOTAL - Water Quality Functions Multiply the score from D1 by D2; then add score to table on p. 1 #### HYDROLOGIC FUNCTIONS - Indicators that wetland unit functions to reduce flooding and stream degradation. #### D 3.1 Characteristics of surface water flows out of the wetland unit Unit is a depression with no surface water leaving it (no outlet)		may have pollutants coming from several sources, but any single source would qualify as opportunity.	
Tilled fields or orchards within 150 ft. of wetland A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging Residential, urban areas, golf courses are within 150 ft. of wetland Wetland is fed by groundwater high in phosphorus or nitrogen X Other Forest practices within 150 feet of wetland YES multiplier is 2 NO multiplier is 1 HYDROLOGIC FUNCTIONS — Indicators that wetland unit functions to reduce flooding and stream degradation. D 3 Does the wetland have the potential to reduce flooding and erosion? D 3.1 Characteristics of surface water flows out of the wetland unit Unit is a depression with no surface water leaving it (no outlet)		Untreated stormwater discharges to wetland	
Fields, roads, or clear-cut logging Residential, urban areas, golf courses are within 150 ft. of wetland Wetland is fed by groundwater high in phosphorus or nitrogen 2 X Other Forest practices within 150 feet of wetland YES multiplier is 2 NO multiplier is 1 2 HYDROLOGIC FUNCTIONS Multiply the score from D1 by D2; then add score to table on p. 1 2 HYDROLOGIC FUNCTIONS Multiply the score from D1 by D2; then add score to table on p. 1 2 HYDROLOGIC FUNCTIONS Multiply the score from D1 by D2; then add score to table on p. 1 2 HYDROLOGIC FUNCTIONS Indicators that wetland unit functions to reduce flooding and stream degradation. D 3 Does the wetland have the potential to reduce flooding and erosion? (see p.4)		Tilled fields or orchards within 150 ft. of wetland	
Residential, urban areas, golf courses are within 150 ft. of wetland Wetland is fed by groundwater high in phosphorus or nitrogen X Other Forest practices within 150 feet of wetland YES multiplier is 2 NO multiplier is 1 HYDROLOGIC FUNCTIONS — Indicators that wetland unit functions to reduce flooding and stream degradation. Does the wetland have the potential to reduce flooding and erosion? D3.1 Characteristics of surface water flows out of the wetland unit Unit is a depression with no surface water leaving it (no outlet)			
X Other Forest practices within 150 feet of wetland YES multiplier is 2 NO multiplier is 1		Residential, urban areas, golf courses are within 150 ft. of wetland	Multiplier
TOTAL - Water Quality Functions Multiply the score from D1 by D2; then add score to table on p. 1 HYDROLOGIC FUNCTIONS - Indicators that wetland unit functions to reduce flooding and stream degradation. D3 Does the wetland have the potential to reduce flooding and erosion? D3.1 Characteristics of surface water flows out of the wetland unit Unit is a depression with no surface water leaving it (no outlet)		Wetland is fed by groundwater high in phosphorus or nitrogen X Other Forest practices within 150 feet of wetland	<u>Z</u>
HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation. D 3 Does the wetland have the potential to reduce flooding and erosion? D 3.1 Characteristics of surface water flows out of the wetland unit Unit is a depression with no surface water leaving it (no outlet)			
D 3.1 Characteristics of surface water flows out of the wetland unit Unit is a depression with no surface water leaving it (no outlet)	u		2
D 3.1 Characteristics of surface water flows out of the wetland unit Unit is a depression with no surface water leaving it (no outlet)			1 , ,,,
Unit is a depression with no surface water leaving it (no outlet)	D 3		(see p.46)
Unit is a "flat" depression (Q.7 on key) or in the Flats class, with permanent surface outflow and no obvious natural outlet and/or outlet is a man-made ditch		· Unit is a depression with no surface water leaving it (no outlet) points = 4	
outflow and no obvious natural outlet and/or outlet is a man-made ditch		Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2	0
(If ditch is not permanently flowing treat unit as "intermittently flowing") Unit has an unconstricted, or slightly constricted, surface outlet (permanently flowing) points = 0 D 3.2 Depth of storage during wet periods. Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry). Marks of ponding are 3 ft. or more above the surface or bottom of the outlet points = 7 The wetland is a "headwater" wetland			U
D 3.2 Depth of storage during wet periods. Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry). • Marks of ponding are 3 ft. or more above the surface or bottom of the outlet	I	outflow and no obvious natural outlet and/or outlet is a man-made ditchpoints = 1	
 units with no outlet measure from the surface of permanent water or deepest part (if dry). Marks of ponding are 3 ft. or more above the surface or bottom of the outlet		(If ditch is not permanently flowing treat unit as "intermittently flowing")	
The wetland is a "headwater" wetland		 (If ditch is not permanently flowing treat unit as "intermittently flowing") Unit has an unconstricted, or slightly constricted, surface outlet (permanently flowing) points = 0 	
 Marks of ponding between 2 ft. to < 3 ft. from surface or bottom of outlet		(If ditch is not permanently flowing treat unit as "intermittently flowing") Unit has an unconstricted, or slightly constricted, surface outlet (permanently flowing) points = 0 D 3.2 Depth of storage during wet periods. Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry).	
 Wetland is flat (yes to Q.2 or Q.7 on key)but has small depressions on the surface that trap water points = 1 Marks of ponding less than 0.5 ft		(If ditch is not permanently flowing treat unit as "intermittently flowing") Unit has an unconstricted, or slightly constricted, surface outlet (permanently flowing) points = 0 D 3.2 Depth of storage during wet periods. Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry). Marks of ponding are 3 ft. or more above the surface or bottom of the outlet	
 Marks of ponding less than 0.5 ft		(If ditch is not permanently flowing treat unit as "intermittently flowing") Unit has an unconstricted, or slightly constricted, surface outlet (permanently flowing) points = 0 D 3.2 Depth of storage during wet periods. Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry). Marks of ponding are 3 ft. or more above the surface or bottom of the outlet	0
D 3.3 Contribution of wetland unit 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 unit		(If ditch is not permanently flowing treat unit as "intermittently flowing") • Unit has an unconstricted, or slightly constricted, surface outlet (permanently flowing) points = 0 D 3.2 Depth of storage during wet periods. Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry). • Marks of ponding are 3 ft. or more above the surface or bottom of the outlet points = 7 • The wetland is a "headwater" wetland points = 5 • 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	0
 The area of the basin is less than 10 times the area of unit		(If ditch is not permanently flowing treat unit as "intermittently flowing") • Unit has an unconstricted, or slightly constricted, surface outlet (permanently flowing) points = 0 D 3.2 Depth of storage during wet periods. Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry). • Marks of ponding are 3 ft. or more above the surface or bottom of the outlet	0
 The area of the basin is 10 to 100 times the area of the unit		(If ditch is not permanently flowing treat unit as "intermittently flowing") Unit has an unconstricted, or slightly constricted, surface outlet (permanently flowing)	0
• Entire unit is in the FLATS class		(If ditch is not permanently flowing treat unit as "intermittently flowing") • Unit has an unconstricted, or slightly constricted, surface outlet (permanently flowing)	
		(If ditch is not permanently flowing treat unit as "intermittently flowing") Unit has an unconstricted, or slightly constricted, surface outlet (permanently flowing) points = 0 D 3.2 Depth of storage during wet periods. Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry). Marks of ponding are 3 ft. or more above the surface or bottom of the outlet	
The me points in the comes work = 5		(If ditch is not permanently flowing treat unit as "intermittently flowing") Unit has an unconstricted, or slightly constricted, surface outlet (permanently flowing)	

D 4	Does the wetland have the opportunity to reduce flooding and erosion? Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. Note which of the following indicators of opportunity apply. Wetland is in a headwater of a river or stream that has flooding problems. Wetland drains to a river or stream that has flooding problems Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems	(see p. 49) Multiplier 1
	Other YES multiplier is 2 NO multiplier is 1	
u	<u>TOTAL</u> – Hydrologic Functions Multiply the score from D3 by D4; then <i>add score to table on p. 1</i>	3

D 4: Wetland I flows into "Ravensdale Creek", which flows subsurface through a mined-out pit before reaching any downstream area with documented flooding problems.

R	Riverine and Freshwater Tidal Fringe Wetlands	Points
	WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.	(only 1 score per box)
R 1	Does the wetland have the <u>potential</u> to improve water quality? (see p.52)	
	R 1.1 Area of surface depressions within the riverine wetland that can trap sediments during a flooding event: Depressions cover > 3/4 area of wetland points = 8 Depressions cover > 1/2 area of wetland points = 4 (If depressions > 1/2 of area of unit draw polygons on aerial photo or map) Depressions present but cover < 1/2 area of wetland points = 2	Figure
	• No depressions present	
	R 1.2 Characteristics of the vegetation in the unit (areas with >90% cover at person height): Trees or shrubs > 2/3 area of the unit	Figure
D 2	Does the wetland have the opportunity to improve water quality?	(see p. 53)
R 2	Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland. Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity. Grazing in the wetland or within 150 ft Untreated stormwater discharges to wetland Tilled fields or orchards within 150 ft. of wetland A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed	(see p. 33)
	fields, roads, or clear-cut logging Residential, urban areas, golf courses are within 150 ft. of wetland The river or stream linked to the wetland has a contributing basin where human activities have raised levels of sediment, toxic compounds or nutrients in the river water above standards for water quality. Other	Multiplier
u	YES multiplier is 2 NO multiplier is 1 TOTAL – Water Quality Functions Multiply the score from R1 by R2; then add score to table on p. 1	
	HYDROLOGIC FUNCTIONS – Indicators that wetland functions to reduce flooding and stream erosion.	
R 3	Does the wetland have the <u>potential</u> to reduce flooding and erosion?	(see p.54)
	R 3.1 Characteristics of the overbank storage the wetland provides: 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 unit) / (average width of stream between banks). If the ratio is more than 20	Figure
	• If the ratio is 5 - <10	
	 If the ratio is 5-<10	Figure
	If the ratio is 5-<10	Figure
R 4	If the ratio is 5- <10	Figure
R 4	If the ratio is 5- <10	

L	Lake-fringe Wetlands	Points
	WATER QUALITY FUNCTIONS – Indicators that the wetland unit functions to improve water quality.	(only 1 score
L 1	Does the wetland unit have the <u>potential</u> to improve water quality? (see p.59)	per box)
	L 1.1 Average width of vegetation along the lakeshore (use polygons of Cowardin classes): Vegetation is more than 33 ft. (10m) wide	Figure
	L 1.2 Characteristics of the vegetation 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. NOTE: 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 vegetation that is not aquatic bed or herbaceous covers > 2/3 of the unit points = 3 Other vegetation that is not aquatic bed in > 1/3 vegetated area points = 1 Aquatic bed cover and open water > 2/3 of the unit points in the boxes above	Figure
T 2	Does the wetland have the opportunity to improve water quality?	(goon 61)
L 2	Answer YES if you know or believe there are pollutants in the lake water, or polluted surface water flowing through the unit to the lake. Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity. Wetland is along the shores of a lake or reservoir that does not meet water quality standards Grazing in the wetland or within 150 ft Polluted water discharges to wetland along upland edge Tilled fields or orchards within 150 ft. of wetland Residential or urban areas are within 150 ft. of wetland Parks with grassy areas that are maintained, ballfields, golf courses (all within 150 ft. of lake shore)	(see p.61) Multiplier
	Power boats with gasoline or diesel engines use the lake Other YES multiplier is 2 NO multiplier is 1	
u	TOTAL – Water Quality Functions Multiply the score from L1 by L2; then add score to table on p. 1	
_	HYDROLOGIC FUNCTIONS – Indicators that wetland functions to reduce shoreline erosion.	
L 3	Does the wetland have the <u>potential</u> to reduce shoreline erosion?	(see p.62)
	L 3 Average width and characteristics of vegetation along the lakeshore (do not include aquatic bed): (choose the highest scoring description that matches conditions in the wetland) 3/4 of distance is shrubs or forest at least 33 ft. (10m) wide	Figure
	• Vegetation is less than 6 ft. (2m) wide (any type except aquatic bed)	
	Record the points in the boxes above	
L 4	Does the wetland have the opportunity to reduce erosion?	(see p. 64)
	Are there features along the shore that will be impacted if the shoreline erodes? Note which of the following conditions apply. There are human structures and activities along the upland edge of the wetland (buildings, fields) that can be damaged by erosion. There are undisturbed natural resources along the upland edge of the wetland (e.g. mature forests, other wetlands) that can be damaged by shoreline erosion. Other	Multiplier
	YES multiplier is 2 NO multiplier is 1 TOTAL Hydrologic Functions Multiply the seems from 1.2 by 1.4; then add seems to table on n. 1.	
u	TOTAL – Hydrologic Functions Multiply the score from L3 by L4; then add score to table on p. 1	

S	Slope Wetlands	Points
	WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.	(only 1 score
S 1	Does the wetland have the <u>potential</u> to improve water quality?	per box) (see p.64)
	S 1.1 Characteristics of average slope of unit: Slope is 1% or less (a 1% slope has a 1 ft. vertical drop in elevation for every 100 ft. horizontal distance) points = 3 Slope is 1% - 2%	
	S 1.2 The soil 2 inches below the surface (or duff layer) is clay, organic (<i>Use NRCS definitions</i>). YES = 3 points NO = 0 points	
	S 1.3 Characteristics of the vegetation in the wetland that trap sediments and pollutants: Choose the points appropriate for the description that best fits the vegetation in the wetland. Dense vegetation means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 inches. Dense, uncut, herbaceous vegetation > 90% of the wetland area	Figure
	• Does not meet any of the criteria above for vegetation	
	Total for S 1 Add the points in the boxes above	
S 2	Does the wetland have the opportunity to improve water quality?	(see p. 67)
	Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity. Grazing in the wetland or within 150 ft	
	Untreated stormwater discharges to wetland Tilled fields, logging, or orchards within 150 ft. of wetland Residential, urban areas, or golf courses are within 150 ft. upslope of wetland Other WES multiplier is 2	Multiplier
u	YES multiplier is 2 NO multiplier is 1 TOTAL – Water Quality Functions Multiply the score from S1 by S2; then add score to table on p. 1	
	HYDROLOGIC FUNCTIONS – Indicators that wetland functions to reduce flooding and stream erosion.	
S 3	Does the wetland have the potential to reduce flooding and stream erosion?	(see p.68)
	S 3.1 Characteristics of vegetation that reduce the velocity of surface flows during storms: Choose the points appropriate for the description that best fits conditions in the wetland (stems of plants should be thick enough (usually > 1/8in), or dense enough to remain erect during surface flows). • Dense, uncut, rigid vegetation covers > 90% of the area of the wetland points = 6 • Dense, uncut, rigid vegetation > 1/2 area of wetland points = 3 • Dense, uncut, rigid vegetation > 1/4 area points = 1 • More than 1/4 of area is grazed, mowed, tilled, or vegetation is not rigid points = 0	
	S 3.2 Characteristics of slope wetland that holds back small amounts of flood flows. The slope has small surface depressions that can retain water over at least 10% of its area. YES = 2 points NO = 0 points	
	Add the points in the boxes above	
S 4	Does the wetland have the <u>opportunity</u> to reduce flooding and erosion? Is the wetland in a landscape position where the reduction in water velocity it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows? <i>Note which of the following conditions apply</i> . Wetland has surface runoff that drains to a river or stream that has flooding problems	(see p. 70)
u	Other (Answer NO if the major source of water is controlled by a reservoir (e.g. wetland is a seep that is on the downstream side of a dam) YES multiplier is 2 NO multiplier is 1 TOTAL – Hydrologic Functions Multiply the score from S3 by S4; then add score to table on p. 1	Multiplier

	These questions apply to wetlands of all HGM classes.		
	HABIT	ΓΑΤ FUNCTIONS – Indicators that wetland functions to provide important habitat.	(only 1 scor per box)
H 1	Does t	he wetland have the <u>potential</u> to provide habitat for many species?	
	H 1.1	Vegetation structure (see P. 72): Check the types of vegetation classes present (as defined by Cowardin) – Size threshold for each class is 1/4 acre or more than 10% of the area if unit is smaller than 2.5 acres. Aquatic Bed Emergent plants X Scrub/shrub (areas where shrubs have > 30% cover) Forested (areas where trees have > 30% cover) If the unit has a forested class check if:	Figure 1
		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. Add the number of vegetation types that qualify. If you have: 4 structures or morepoints = 4 2 structurespoints = 1 1 structurepoints = 0	
	Н 1.2	Hydroperiods (see p.73): Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or 1/4 acre to count (see text for descriptions of hydroperiods). X Permanently flooded or inundated Seasonally flooded or inundated Occasionally flooded or inundated Saturated only Y Permanently flowing stream or river in, or adjacent to, the wetland Seasonally flowing stream in, or adjacent to, the wetland Lake-fringe wetland	Figure 2
	** 1.0	Freshwater tidal wetland 2 points Map of hydroperiods	
	Н 1.3	Richness of Plant Species (see p. 75): 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) You do not have to name the species. Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle. If you counted: > 19 speciespoints = 2 5 - 19 speciespoints = 1 List species below if you want to: < 5 speciespoints = 0	0
	H 1.4	Interspersion of Habitats (see p. 76): Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.	
	H 1.4	Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or	Figure 0
	H 1.4	Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none. Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always "high". Use map of Cowardin classes.	0
	H 1.4	Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none. Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always "high". Use map of Cowardin classes.	0

2 Does	the wetland have the opportunity to provide habitat for many species?	(only 1 scor per box)
H 2.1	Buffers (see P. 80): Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed". 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% of circumference. No structures are within the undisturbed part of buffer (relatively undisturbed also means no grazing, no landscaping, no daily human use). points = 5 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. points = 4 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference. points = 4 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference. points = 3 X 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. points = 3 If buffer does not meet any of the criteria above: No paved areas (except paved trails) or buildings within 25m (80 ft) of wetland > 95% circumference. Light to moderate grazing or lawns are OK. points = 2 No paved areas of buildings within 50m of wetland for > 50% circumference. Light to moderate grazing or lawns are OK. points = 1 Vegetated buffers are < 2m wide (6.6 ft) for more than 95% circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland). points = 0 Buffer does not meet any of the criteria above. points = 1 Arial photo showing buffers	Figure 3
Н 2.2	Corridors and Connections (see p. 81) H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft. wide, has at least a 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (Dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor). YES = 4 points (go to H 2.3) NO = go to H 2.2.2 H. 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50 ft. wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? OR a Lakefringe wetland, if it does not have an undisturbed corridor as in the question above? YES = 2 points (go to H 2.3) NO = go to H 2.2.3 H. 2.2.3 Is the wetland: Within 5 mi (8km) of a brackish or salt water estuary OR Within 3 miles of a large field or pasture (> 40 acres) OR Within 1 mile of a lake greater than 20 acres? NO = 0 points	0

- H 2.1: The land surrounding Wetland I appears to meet the definition of "relatively undisturbed" as the area along Ravensdale Creek has not been logged recently and access roads with associated disturbance are greater than 50 meters away for more than 50 percent of the circumference.
- H 2.2.2: Wetland I is not part of a relatively undisturbed and unbroken vegetated corridor that connects with at least 25 acres of undisturbed land. The undisturbed land is broken up by multiple access roads.
- H 2.2.3: The nearest brackish or saltwater estuary would be greater than 20 miles away. No 40-acre field or pastures have been identified within 3 miles. The nearest lake that is greater than 20 acres in size is Lake No. 12 which is greater than 1 mile away to the south.

Aspen Stands of WDFW priority habitats, and the counters in which they can be found, in the PHS report https://disc.org.org/lab/pixis.htm) Which of the following priority habitats are within 330 ft. (100m) of the wetland unit? NOTE: the connections do not have to be relatively undisturbed. Aspen Stands: Pure or mixed stands of a spen greater than 0.4 ha (1 acre). 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). 1.22). Herbaccons Balds: Variable size patches of grass and forbs on shallow soils over bedrock. Old-growth Mature forets: (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 20 trees ha (8 rees eace) 8 le m (32 in) db to > 200 years of olg. (Mature forests) Stands with average diameters exceeding 55 em (21 in) dbic crown cover may be less that (10%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth, 90 – 200 years old west of the Cascade crenty coverage of the old. Cascade crenty is stand to the Cascade crenty of the Ca		II 2.2 Noon on adjacent to other migrity helitate listed by WDEW (see n. 92); (see n. n. n. d. annul to	
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There are at least 3 other wetlands within 1/2 mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other developmentpoints = 5 The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within 1/2 milepoints = 5 There are at least 3 other wetlands within 1/2 mile, BUT the connections between them are disturbedpoints = 3 The wetland fringe on a lake with disturbance and there are 3 other lake-fringe wetlands within 1/2 milepoints = 3 There is at least 1 wetland within 1/2 milepoints = 2 There are no wetlands within 1/2 milepoints = 0 H 2 TOTAL Score – opportunity for providing habitat Add the scores from H2.1, H2.2, H2.3, H2.4 TOTAL for H 1 from page 8			
relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other developmentpoints = 5 The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within 1/2 mile			
but connections should NOT be bisected by paved roads, fill, fields, or other developmentpoints = 5 The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within 1/2 mile			
• The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within 1/2 mile			
wetlands within 1/2 mile			
There are at least 3 other wetlands within 1/2 mile, BUT the connections between them are disturbed			
There are at least 3 other wetlands within 1/2 mile, BUT the connections between them are disturbed		wetlands within 1/2 milepoints = 5	2
 The wetland fringe on a lake with disturbance and there are 3 other lake-fringe wetlands within 1/2 mile		· There are at least 3 other wetlands within 1/2 mile, BUT the connections between them are	3
within 1/2 mile		disturbedpoints = 3	
within 1/2 mile		• The wetland fringe on a lake with disturbance and there are 3 other lake-fringe wetlands	
There is at least 1 wetland within 1/2 mile points = 2 There are no wetlands within 1/2 mile points = 0 H 2 TOTAL Score – opportunity for providing habitat Add the scores from H2.1, H2.2, H2.3, H2.4 TOTAL for H 1 from page 8			
There are no wetlands within 1/2 mile points = 0 H 2 TOTAL Score – opportunity for providing habitat Add the scores from H2.1, H2.2, H2.3, H2.4 10 TOTAL for H 1 from page 8 1			
H 2 TOTAL Score – opportunity for providing habitat Add the scores from H2.1, H2.2, H2.3, H2.4 10 TOTAL for H 1 from page 8			
TOTAL for H 1 from page 8 1		·	
		H 2 TOTAL Score – opportunity for providing habitat Add the scores from H2.1, H2.2, H2.3, H2.4	10
Total Score for Habitat Functions Add the points for H 1 and H 2; then record the result on p. 1		TOTAL for H 1 from page 8	1
	u	Total Score for Habitat Functions Add the points for H 1 and H 2; then record the result on p. 1	11

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

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

	Wetland Type – Check off any criteria that apply to the wetland. Circle the Category when the appropriate				
	criteria are met.				
SC1	Estuarine wetlands? (see p.86)				
	Does the wetland unit meet the following criteria for Estuarine wetlands?				
	The dominant water regime is tidal, Vegetated, and				
	With a salinity greater than 0.5 ppt.				
-	YES = Go to SC 1.1				
	SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural	G 4 1			
	Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? YES = Category I NO = go to SC 1.2	Cat. 1			
	SC 1.2 Is the wetland at least 1 acre in size and meets at least two of the following conditions?				
	YES = Category I NO = Category II The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has	Cat. I			
	less than 10% cover of non-native plant species. If the non-native <i>Spartina</i> spp, are only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh	Cat. II			
	with native species would be a Category 1. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre.	Dual			
	At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland The wetland has at least 2 of the following features: tidal channels, depressions with open water,	Rating I/II			
	or contiguous freshwater wetlands.				
SC2	Natural Heritage Wetlands (see p. 87)				
SCZ	Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as				
	either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or				
	Sensitive plant species.				
	SC 2.1 Is the wetland being rated in a Section/Township/Range that contains a natural heritage wetland? (<i>This</i>				
	question is used to screen out most sites before you need to contact WNHP/DNR.)				
	S/T/R information from Appendix D or accessed from WNHP/DNR web site				
	YES Contact WNHP/DNR (see p. 79) and go to SC 2.2 NO \overline{X}				
	SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as a site with state threatened				
	7 2 7				
	YES = Category 1 NO \underline{X} not a Heritage Wetland	Cat I			
G G G	Bogs (see p. 87)				
SC3	Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? Use				
	the key below to identify if the wetland is a bog. If you answer yes you will still need to rate the				
	wetland based on its function.				
	1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that				
	compose 16 inches or more of the first 32 inches of soil profile? (See Appendix B for a field key to identify organic soils)? YES = go to question 3 NO = go to question 2				
	2. Does the wetland have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or				
	pond? YES = go to question 3 NO = is not a bog for purpose of rating				
	3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)?				
	YES = Is a bog for purpose of rating $NO = go$ to question 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" deep. If the pH is				
	less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog.				
	4. Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western				
	hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine. WITH any of				
	the species (or combination of species) on the bog species plant list in Table 3 as a significant				
	component of the ground cover (> 30% coverage of the total shrub/herbaceous cover)?	Cat. I			
	YES = Category I NO = Is not a bog for purpose of rating				

~ ~ .	Forested Wotlands (see n. 00)					
SC4	C4 Forested Wetlands (see p. 90) Does the wetland have at least 1 ages of forest that most one of these criteria for the Department of Eigh					
	Does the wetland have at least 1 acre of forest that meet one of these criteria for the Department of Fish					
	and Wildlife's forests as priority habitats? If you answer yes you will still need to rate the wetland					
	based on its function.					
	Old-growth forests: (west of Cascade Crest) Stands of at least two three species forming a					
	multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare)					
	that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm or					
	more).					
	NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees					
	in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW					
	criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter.					
	Mature forests: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old					
	OR have an average diameters (dbh) exceeding 21 inches (53 cm); 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.	Cat. I				
	YES = Category I NO = \underline{X} not a forested wetland with special characteristics					
SC5	Wetlands in Coastal Lagoons (see p. 91)					
	Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?					
	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 surface water that is saline or brackish (> 0.5					
	ppt) during most of the year in at least a portion of the lagoon (needs to be measured near the					
	bottom.) VES = Go to SC 5.1 NO. Y. not a wetland in a coastal lagoon					
	YES = Go to SC 5.1 NO \underline{X} not a wetland in a coastal lagoon					
	SC 5.1 Does the wetland meet all of the following three conditions? The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing) and has					
	less than 20% cover of invasive plant species (see list of invasive species on p. 74).					
	At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed					
	or un-mowed grassland.					
	The wetland is larger than 1/10 acre (4350 square ft.)					
	$YES = Category I \qquad NO = Category II$	Cat. II				
SC6	<u>Interdunal Wetlands</u> (see p. 93)					
	Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or					
	WBUO)?					
	YES = Go to SC 6.1 NO \underline{X} not an interdunal wetland for rating					
	If you answer yes you will still need to rate the wetland based on its functions.					
	In practical terms that means the following geographic areas:					
	· 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					
	SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is one acre or larger?					
	$YES = Category II \qquad NO = go to SC 6.2$	Cat. II				
	SC 6.2 Is the wetland between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre?	0400 22				
	YES = Category III	Cat. III				
	Category of wetland based on Special Characteristics	<u> </u>				
u	Choose the "highest" rating if wetland falls into several categories, and record on p. 1.					
	If you answered NO for all types enter "Not Applicable" on p. 1					
\Box	Z The Street of the Street Street					

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users Updated Oct. 2008 with the new WDFW definitions for priority habitats

Name of wet	land (if known): Wetland J - 1042.0	005: Ray	vensdale	D	ate of s	site visit: <u>12/05/1</u>	7
Rated by: Em	nily Swaim/Richard Peel Ti	ained by	Ecology? Yes X	No D	ate of t	raining: <u>3/31/16</u>	
SEC: 01	TWNSHP: 21N	RNGE:	06E Is	S/T/R in Appen	dix D?	Yes 1	No X
	Map of wetland unit: I	igure <u>1</u>		Estimated size <u>0.</u>	04 acre	<u> </u>	
		SUMM	ARY OF RATING	7			
Category ba	sed on FUNCTIONS provided by v	vetland:	III				
	Category I = Score > 70		Score for Wat	er Quality Functi	ions	12	
	Category II = Score 51 - 69		Score for H	lydrologic Functi	ons	12	
	Category III = Score 30 – 50		Score f	or Habitat Functi	ons	12	
	Category IV = Score < 30		TOTAL	Score for Functi	ons	36	\neg
Category bas	sed on SPECIAL CHARACTERIST	CS of We	etland Does no	t apply		1	
	Final Catego	ry (cho	ose the "highest" o	category from abo	ove")	III	
	Summary of basic info	rmation	n about the wetla	nd unit.			
	Wetland Unit has Special			HGM Class			
	Characteristics			r Rating	V		
	Estuarine Natural Heritage Wetland		Depressional Riverine		X		
	- atalai ai ilciitage ii chana		111,011110				

building of busic inform	iiutioii	ubot
Wetland Unit has Special Characteristics		
Characteristics		
Estuarine		D
Natural Heritage Wetland		R
Bog		L
Mature Forest		S
Old Growth Forest		F
Coastal Lagoon		F
Interdunal		
None of the above	X	C H

X

Does the wetland being rated meet any of the criteria below? If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

	Check List for Wetlands that Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1.	Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered animal or plant species (T/E species)? For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		X
SP2.	Has the wetland unit been documented as habitat for any State listed Threatened or Endangered animal species? For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category 1 Natural Heritage Wetlands (see p. 19 of data form).		X
SP3.	Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?		X
SP4.	Does the wetland unit have a local significance in addition to its functions? For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		X

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

Wetland name or number – Wetland J

The hydrogeomorphic classification groups wetlands in to those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Classification of Vegetated Wetlands for Western Washington

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 (i.e. except during floods)? NO – go to 2 YES – the wetland class is Tidal Fringe If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?
	YES – Freshwater Tidal Fringe NO – Saltwater Tidal Fringe (Estuarine) If your wetland can be classified as a Freshwater Tidal Fringe use the forms for Riverine wetlands. If it is a Saltwater Tidal Fringe it is rated as an Estuarine wetland. Wetlands that were call estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p).
2.	The entire wetland unit is flat and precipitation is 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 meet both of the following criteria? The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) where at least 20 acres (8ha) in size; At least 30% of the open water area is deeper than 6.6 (2 m)? NO - go to 4 YES - The wetland class is Lake-fringe (Lacustrine Fringe)
4.	Does the entire wetland 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? NOTE: Surface water does not pond in these types of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 foot deep). NO - go to 5 YES - The wetland class is Slope
5.	Does the entire wetland 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 two years. NOTE: The riverine unit can contain depressions that are filled with water when the river is not flooding NO - go to 6 YES - The wetland class is Riverine
6.	Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time of 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 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 your wetland. 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 class listed in column 2 is less

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	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of	Treat as ESTUARINE under wetlands with special
freshwater wetland	characteristics

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

than 10% of the unit, classify the wetland using the class that represents more than 90% of the total area.

D	Depressional and Flat Wetlands	Points
	WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.	(only 1 score
D 1		per box)
D 1	Does the wetland have the <u>potential</u> to improve water quality? D 1.1 Characteristics of surface water flows out of the wetland:	(see p.38)
	· Unit is a depression with no surface water leaving it (no outlet)	Figure
	Unit has an intermittently flowing, OR highly constricted, permanently flowing outlet points = 2 Unit has an unconstricted, or slightly constricted, surface outlet (permanently flowing) points = 1	
	Unit is a "flat" depression (Q.7 on key), or in the Flats class, with permanent surface	3
	outflow and no obvious natural outlet and/or outlet is a man-made ditch	
	D 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic (use NRCS definitions)	0
	YES points = 4 NO points = 0 D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class):	
	• Wetland has persistent, ungrazed vegetation > = 95% of area	Figure
	 Wetland has persistent, ungrazed vegetation > = 1/2 of area	3
	• Wetland has persistent, ungrazed vegetation < 1/10 of area	
	Map of Cowardin vegetation classes D 1.4 Characteristics of seasonal ponding or inundation: This is the area of the wetland that is ponded for at	
	least 2 months, but dries out sometime during the year. Do not count the area that is permanently	Figure 3
	ponded. Estimate area as the average condition 5 out of 10 years. Area seasonally ponded is > 1/2 total area of wetland	0
	· Area seasonally ponded is > 1/4 total area of wetland	
	· Area seasonally ponded is < 1/4 total area of wetland	
	Total for D 1 Add the points in the boxes above	6
D 2	Does the wetland have the opportunity to improve water quality?	(see p. 44)
	Answer YES if you know or believe there are pollutants in groundwater or surface water coming into	(see p. 11)
	the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? <i>Note which of the following conditions provide the sources of pollutants. A unit</i>	
	may have pollutants coming from several sources, but any single source would qualify as opportunity.	
	Grazing in the wetland or within 150 ft	
	Untreated stormwater discharges to wetlandTilled fields or orchards within 150 ft. of wetland	
	A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed	
	fields, roads, or clear-cut logging Residential, urban areas, golf courses are within 150 ft. of wetland	Multiplier
	Wetland is fed by groundwater high in phosphorus or nitrogen	<u>2</u>
	X Other Forest practices within 150 feet of wetland YES multiplier is 2 NO multiplier is 1	
u	TOTAL – Water Quality Functions Multiply the score from D1 by D2; then add score to table on p. 1	12
	HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation.	12
D 3	Does the wetland have the <u>potential</u> to reduce flooding and erosion?	(see p.46)
	D 3.1 Characteristics of surface water flows out of the wetland unit	
	 Unit is a depression with no surface water leaving it (no outlet)	
	Unit is a "flat" depression (Q.7 on key) or in the Flats class, with permanent surface	4
	outflow and no obvious natural outlet and/or outlet is a man-made ditch	
	• Unit has an unconstricted, or slightly constricted, surface outlet (permanently flowing) points = 0	
	D 3.2 Depth of storage during wet periods. Estimate the height of ponding above the bottom of the outlet. For	
	units with no outlet measure from the surface of permanent water or deepest part (if dry). Marks of ponding are 3 ft. or more above the surface or bottom of the outlet points = 7	
	• The wetland is a "headwater" wetland	5
	 Marks of ponding between 2 ft. to < 3 ft. from surface or bottom of outlet	
	• Wetland is flat (yes to Q.2 or Q.7 on key)but has small depressions on the surface that trap water points = 1	
	Marks of ponding less than 0.5 ft	
	D 3.3 Contribution of wetland unit 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 unit	3
	 The area of the basin is 10 to 100 times the area of the unit	
	Entire unit is in the FLATS class	
	Total for D 3 Add the points in the boxes above	12

D 4	Does the wetland have the opportunity to reduce flooding and erosion?	(see p. 49)		
	Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. Note which of the following indicators of opportunity apply. Wetland is in a headwater of a river or stream that has flooding problems. Wetland drains to a river or stream that has flooding problems			
	Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems Other			
	YES multiplier is 2 NO multiplier is 1			
u	TOTAL – Hydrologic Functions Multiply the score from D3 by D4; then <i>add score to table on p. 1</i>	12		

D 4: If Wetland J contained an outlet, it would flow into "Stream Y", which flows into Ravensdale Creek, which flows subsurface through a mined-out pit before reaching any downstream area with documented flooding problems.

R	Riverine and Freshwater Tidal Fringe Wetlands	Points
	WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.	(only 1 score per box)
R 1	Does the wetland have the <u>potential</u> to improve water quality? (see p.52)	•
	R 1.1 Area of surface depressions within the riverine wetland that can trap sediments during a flooding event: Depressions cover > 3/4 area of wetland points = 8 Depressions cover > 1/2 area of wetland points = 4 (If depressions > 1/2 of area of unit draw polygons on aerial photo or map) Depressions present but cover < 1/2 area of wetland points = 2	Figure
	• No depressions present	
	R 1.2 Characteristics of the vegetation in the unit (areas with >90% cover at person height): Trees or shrubs > 2/3 area of the unit	Figure
D 2	Does the wetland have the opportunity to improve water quality?	(see p. 53)
R 2	Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland. Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity. Grazing in the wetland or within 150 ft Untreated stormwater discharges to wetland Tilled fields or orchards within 150 ft. of wetland A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed	(see p. 33)
	fields, roads, or clear-cut logging Residential, urban areas, golf courses are within 150 ft. of wetland The river or stream linked to the wetland has a contributing basin where human activities have raised levels of sediment, toxic compounds or nutrients in the river water above standards for water quality. Other	Multiplier
u	YES multiplier is 2 NO multiplier is 1 TOTAL – Water Quality Functions Multiply the score from R1 by R2; then add score to table on p. 1	
	HYDROLOGIC FUNCTIONS – Indicators that wetland functions to reduce flooding and stream erosion.	
R 3	Does the wetland have the <u>potential</u> to reduce flooding and erosion?	(see p.54)
	R 3.1 Characteristics of the overbank storage the wetland provides: 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 unit)/(average width of stream between banks).	Figure
	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	
	If the ratio is between 10 – 20	Figure
	If the ratio is between 10 – 20	Figure
R 4	If the ratio is between 10 – 20	Figure
R 4	If the ratio is between 10 – 20	

L	Lake-fringe Wetlands	Points		
	WATER QUALITY FUNCTIONS – Indicators that the wetland unit functions to improve water quality.	(only 1 score		
L 1	Does the wetland unit have the <u>potential</u> to improve water quality? (see p.59)	per box)		
	L 1.1 Average width of vegetation along the lakeshore (use polygons of Cowardin classes): Vegetation is more than 33 ft. (10m) wide	Figure		
	L 1.2 Characteristics of the vegetation 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. NOTE: 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 vegetation that is not aquatic bed or herbaceous covers > 2/3 of the unit points = 3 Other vegetation that is not aquatic bed in > 1/3 vegetated area points = 1 Aquatic bed cover and open water > 2/3 of the unit points in the boxes above	Figure		
T 2	Does the wetland have the opportunity to improve water quality?	(goon 61)		
L 2	Answer YES if you know or believe there are pollutants in the lake water, or polluted surface water flowing through the unit to the lake. Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity. Wetland is along the shores of a lake or reservoir that does not meet water quality standards Grazing in the wetland or within 150 ft Polluted water discharges to wetland along upland edge Tilled fields or orchards within 150 ft. of wetland Residential or urban areas are within 150 ft. of wetland	(see p.61) Multiplier		
	Parks with grassy areas that are maintained, ballfields, golf courses (all within 150 ft. of lake shore) Power boats with gasoline or diesel engines use the lake Other YES multiplier is 2 NO multiplier is 1			
u	TOTAL – Water Quality Functions Multiply the score from L1 by L2; then add score to table on p. 1			
_	HYDROLOGIC FUNCTIONS – Indicators that wetland functions to reduce shoreline erosion.			
L 3	Does the wetland have the <u>potential</u> to reduce shoreline erosion?	(see p.62)		
	L 3 Average width and characteristics of vegetation along the lakeshore (do not include aquatic bed): (choose the highest scoring description that matches conditions in the wetland) 3/4 of distance is shrubs or forest at least 33 ft. (10m) wide	Figure		
	• Vegetation is less than 6 ft. (2m) wide (any type except aquatic bed)			
	Record the points in the boxes above			
L 4	Does the wetland have the opportunity to reduce erosion?	(see p. 64)		
	Are there features along the shore that will be impacted if the shoreline erodes? Note which of the following conditions apply. There are human structures and activities along the upland edge of the wetland (buildings, fields) that can be damaged by erosion. There are undisturbed natural resources along the upland edge of the wetland (e.g. mature forests, other wetlands) that can be damaged by shoreline erosion. Other	Multiplier		
	YES multiplier is 2 NO multiplier is 1 TOTAL Hydrologic Functions Multiply the seems from 1.2 by 1.4; then add seems to table on n. 1.			
u	TOTAL – Hydrologic Functions Multiply the score from L3 by L4; then add score to table on p. 1			

S	Slope Wetlands	Points
	WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.	(only 1 score
S 1	Does the wetland have the <u>potential</u> to improve water quality?	per box) (see p.64)
	S 1.1 Characteristics of average slope of unit: Slope is 1% or less (a 1% slope has a 1 ft. vertical drop in elevation for every 100 ft. horizontal distance) points = 3 Slope is 1% - 2%	
	S 1.2 The soil 2 inches below the surface (or duff layer) is clay, organic (<i>Use NRCS definitions</i>). YES = 3 points NO = 0 points	
	S 1.3 Characteristics of the vegetation in the wetland that trap sediments and pollutants: Choose the points appropriate for the description that best fits the vegetation in the wetland. Dense vegetation means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 inches. Dense, uncut, herbaceous vegetation > 90% of the wetland area points = 6 Dense, uncut, herbaceous vegetation > 1/2 of area points = 3 Dense, woody, vegetation > 1/2 of area points = 2 Dense, uncut, herbaceous vegetation > 1/4 of area points = 1	Figure
	• Does not meet any of the criteria above for vegetation	
	Total for S 1 Add the points in the boxes above	
S 2	Does the wetland have the opportunity to improve water quality?	(see p. 67)
	Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity. Grazing in the wetland or within 150 ft	
	Untreated stormwater discharges to wetland Tilled fields, logging, or orchards within 150 ft. of wetland Residential, urban areas, or golf courses are within 150 ft. upslope of wetland Other WES multiplier is 2	Multiplier
u	YES multiplier is 2 NO multiplier is 1 TOTAL – Water Quality Functions Multiply the score from S1 by S2; then add score to table on p. 1	
	HYDROLOGIC FUNCTIONS – Indicators that wetland functions to reduce flooding and stream erosion.	
S 3	Does the wetland have the potential to reduce flooding and stream erosion?	(see p.68)
	S 3.1 Characteristics of vegetation that reduce the velocity of surface flows during storms: Choose the points appropriate for the description that best fits conditions in the wetland (stems of plants should be thick enough (usually > 1/8in), or dense enough to remain erect during surface flows). Dense, uncut, rigid vegetation covers > 90% of the area of the wetland points = 6 Dense, uncut, rigid vegetation > 1/2 area of wetland points = 3 Dense, uncut, rigid vegetation > 1/4 area points = 1 More than 1/4 of area is grazed, mowed, tilled, or vegetation is not rigid points = 0	
	S 3.2 Characteristics of slope wetland that holds back small amounts of flood flows. The slope has small surface depressions that can retain water over at least 10% of its area. YES = 2 points NO = 0 points	
	Add the points in the boxes above	
S 4	Does the wetland have the <u>opportunity</u> to reduce flooding and erosion? Is the wetland in a landscape position where the reduction in water velocity it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows? <i>Note which of the following conditions apply.</i> Wetland has surface runoff that drains to a river or stream that has flooding problems	(see p. 70)
	Other (Answer NO if the major source of water is controlled by a reservoir (e.g. wetland is a seep that is on the downstream side of a dam) YES multiplier is 2 NO multiplier is 1	Multiplier
u	TOTAL – Hydrologic Functions Multiply the score from S3 by S4; then add score to table on p. 1	

	se questi	ions apply to wetlands of all HGM classes.	Points
	HABIT	TAT FUNCTIONS – Indicators that wetland functions to provide important habitat.	(only 1 scor per box)
H 1	Does t	he wetland have the <u>potential</u> to provide habitat for many species?	
	H 1.1	Vegetation structure (see P. 72): Check the types of vegetation classes present (as defined by Cowardin) – Size threshold for each class is 1/4 acre or more than 10% of the area if unit is smaller than 2.5 acres. Aquatic Bed X Emergent plants X Scrub/shrub (areas where shrubs have > 30% cover) Forested (areas where trees have > 30% cover)	Figure 1
		If the unit has a forested class check if: 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. Add the number of vegetation types that qualify. If you have: 4 structures or morepoints = 4 2 structurespoints = 1 1 structurepoints = 0	
	Н 1.2	Hydroperiods (see p.73): Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or 1/4 acre to count (see text for descriptions of hydroperiods). X Permanently flooded or inundated Seasonally flooded or inundated Occasionally flooded or inundated Saturated only Permanently flowing stream or river in, or adjacent to, the wetland Seasonally flowing stream in, or adjacent to, the wetland Lake-fringe wetland	Figure 2
		Freshwater tidal wetland= 2 points Map of hydroperiods	
	Н 1.3	Richness of Plant Species (see p. 75): Count the number of plant species in the wetland that cover at least 10 ft^2 (different patches of the same species can be combined to meet the size threshold) You do not have to name the species. Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle. If you counted: > 19 speciespoints = 2 5 - 19 speciespoints = 1 List species below if you want to: < 5 speciespoints = 0	1
1			
	H 1.4	Interspersion of Habitats (see p. 76): Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.	
	H 1.4	Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or	Figure
	H 1.4	Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none. Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always "high". Use map of Cowardin classes.	1
	H 1.4	Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none. Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always "high". Use map of Cowardin classes.	1

H 2 Does t	the wetland have the opportunity to provide habitat for many species?	(only 1 score per box)
H 2.1	Buffers (see P. 80): Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed". 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% of circumference. No structures are within the undisturbed part of buffer (relatively undisturbed also means no grazing, no landscaping, no daily human use). ———————————————————————————————————	Figure
H 2.2	Corridors and Connections (see p. 81) H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft. wide, has at least a 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (Dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor). YES = 4 points (go to H 2.3) NO = go to H 2.2.2 H. 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50 ft. wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? OR a Lakefringe wetland, if it does not have an undisturbed corridor as in the question above? YES = 2 points (go to H 2.3) NO = go to H 2.2.3 H. 2.2.3 Is the wetland: Within 5 mi (8km) of a brackish or salt water estuary OR Within 3 miles of a large field or pasture (> 40 acres) OR YES = 1 point NO = 0 points	0

- H 2.1: The actively managed forestlands surrounding Wetland J do not meet the definition of "relatively undisturbed". Disturbance includes access roads, un-reclaimed coal strip mines, managed forest lands, dense populations of invasive vegetation (e.g., Himalayan blackberry and Scotch broom), et cetera.
- H 2.2: Wetland J is not part of a relatively undisturbed and unbroken vegetated corridor. The nearest brackish or saltwater estuary would be greater than 20 miles away. No 40-acre field or pastures have been identified within 3 miles. The nearest lake that is greater than 20 acres in size is Lake No. 12 which is greater than 1 mile away to the south.

u	Total Score for Habitat Functions Add the points for H 1 and H 2; then record the result on p. 1	12
	TOTAL for H 1 from page 8	3
	•	9
	• There are no wetlands within 1/2 mile	
	within 1/2 mile	
	• The wetland fringe on a lake with disturbance and there are 3 other lake-fringe wetlands within 1/2 milepoints = 3	
	disturbedpoints = 3	
	· There are at least 3 other wetlands within 1/2 mile, BUT the connections between them are	3
	wetlands within 1/2 mile	2
	• The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe	
	but connections should NOT be bisected by paved roads, fill, fields, or other development points = 5	
	 There are at least 3 other wetlands within 1/2 mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, 	
	H 2.4 Wetland Landscape: Choose the one description of the landscape around the wetland that best fits (see p. 84)	
	addressed in question H 2.4)	
	Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are	
	If wetland has 1 priority habitat = 1 point No habitats = 0 points	
	If wetland has 2 priority habitats = 3 points	
	If wetland has 3 or more priority habitats = 4 points	
	western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30 cm (12 in) in diameter at the largest end, and > 6 m (20 ft) long.	
	to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 51 cm (20 in) in	
	X Snags and Logs: Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics	
	andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.	
	Talus: Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt,	
	Cliffs: Greater than 7.6 m (25 ft) high and occurring below 5000 ft.	
	rock, ice, or other geological formations and is large enough to contain a human.	
	WDFW report: pp. 167-169 and glossary in Appendix A). Caves: A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils,	
	and Puget Sound Nearshore. (full descriptions of habitats and the definition of relatively undisturbed are in	
	Nearshore: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore,	
	provide functional life history requirements for instream fish and wildlife resources.	
	X Instream: The combination of physical, biological, and chemical processes and conditions that interact to	
	a wet prairie (full descriptions in WDFW PHS report p. 161).	4
	Westside Prairies: Herbaceous, non-forested plant communities that can either take the form of a dry prairie or	
	terrestrial ecosystems which mutually influence each other.	
	oak component is important (<i>full descriptions in WDFW PHS report p. 158</i>). X Riparian: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and	
	Oregon white Oak: Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the	
	generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest.	
	cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is	
	dbh or > 200 years of age. (Mature forests) Stands with average diameters exceeding 53 cm (21 in) dbh; crown	
	multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in)	
	Old-growth/Mature forests: (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a	
	Herbaceous Balds: Variable size patches of grass and forbs on shallow soils over bedrock.	
	Biodiversity Areas and Corridors : Areas of habitat that are relatively important to various species of native fish and wildlife (<i>full descriptions in WDFW PHS report p. 152</i>).	
	Aspen Stands: Pure or mixed stands of aspen greater than 0.4 ha (1 acre).	
	NOTE: the connections do not have to be relatively undisturbed.	
	Which of the following priority habitats are within 330 ft. (100m) of the wetland unit?	
	http://wdfw.wa.gov/hab/phslist.htm)	
	descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report	
	H 2.3 Near or adjacent to other priority habitats listed by WDFW (see p. 82): (see new and complete	

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

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

	Wetland Type – Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.					
SC1	Estuarine wetlands? (see p.86)					
SCI	Does the wetland unit meet the following criteria for Estuarine wetlands?					
	The dominant water regime is tidal,					
	Vegetated, and					
	With a salinity greater than 0.5 ppt.					
	YES = Go to SC 1.1					
	SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC	Cat. 1				
	332-30-151? YES = Category I NO = go to SC 1.2	Cat. 1				
	SC 1.2 Is the wetland at least 1 acre in size and meets at least two of the following conditions?					
	YES = Category I NO = Category II	Cat. I				
	The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has	Cat. I				
	less than 10% cover of non-native plant species. If the non-native Spartina spp., are only species	Cat. II				
	that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh	Cu., 11				
	with native species would be a Category 1. Do not, however, exclude the area of Spartina in					
	determining the size threshold of 1 acre.	Dual				
	At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland	Rating				
	The wetland has at least 2 of the following features: tidal channels, depressions with open water,	I/II				
	or contiguous freshwater wetlands.					
SC2	Natural Heritage Wetlands (see p. 87) Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as					
	either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or					
	Sensitive plant species.					
	SC 2.1 Is the wetland being rated in a Section/Township/Range that contains a natural heritage wetland? (<i>This</i>					
	question is used to screen out most sites before you need to contact WNHP/DNR.)					
	S/T/R information from Appendix D or accessed from WNHP/DNR web site					
	YES Contact WNHP/DNR (see p. 79) and go to SC 2.2 NO \underline{X}					
	SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as a site with state threatened					
	or endangered plant species?	Cat I				
	$\mathbf{YES} = \mathbf{Category 1} \qquad \qquad \mathbf{NO} \ \underline{\mathbf{X}} \qquad \text{not a Heritage Wetland}$					
SC3	Bogs (see p. 87) Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? Use					
	the key below to identify if the wetland is a bog. If you answer yes you will still need to rate the					
	wetland based on its function.					
	1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that					
	compose 16 inches or more of the first 32 inches of soil profile? (See Appendix B for a field key to					
	identify organic soils)? YES = go to question 3 \mathbf{NO} = go to question 2					
	2. Does the wetland have organic soils, either peats or mucks that are less than 16 inches deep over					
	bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? YES = go to question 3 NO = is not a bog for purpose of rating					
	pond? YES = go to question 3 NO = is not a bog for purpose of rating 3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present,					
	consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more					
	than 30% of the total shrub and herbaceous cover consists of species in Table 3)?					
	YES = Is a bog for purpose of rating $NO = go$ to question 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" deep. If the pH is					
	less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog.					
	4. Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western					
	hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine. WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant					
	component of the ground cover (> 30% coverage of the total shrub/herbaceous cover)?	Cat. I				
	YES = Category I $NO = Is \text{ not a bog for purpose of rating}$	Cal. I				

SC4	Forested Wetlands (see p. 90)						
	Does the wetland have at least 1 acre of forest that meet one of these criteria for the Department of Fish						
	and Wildlife's forests as priority habitats? If you answer yes you will still need to rate the wetland						
	based on its function.						
	Old-growth forests: (west of Cascade Crest) Stands of at least two three species forming a						
	multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare)						
	that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm or						
	more).						
	NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees						
	in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW						
	criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter.						
	Mature forests: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old						
	OR have an average diameters (dbh) exceeding 21 inches (53 cm); crown cover may be less than						
	100%; decay, decadence, numbers of snags, and quantity of large downed material is generally	C 4 T					
	less than that found in old-growth.	Cat. I					
	YES = Category I NO = \underline{X} not a forested wetland with special characteristics						
SC5	Wetlands in Coastal Lagoons (see p. 91)						
	Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?						
	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 surface water that is saline or brackish (> 0.5						
	ppt) during most of the year in at least a portion of the lagoon (needs to be measured near the						
	bottom.)						
	YES = Go to SC 5.1 NO \underline{X} not a wetland in a coastal lagoon						
	SC 5.1 Does the wetland meet all of the following three conditions?						
	The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing) and has						
	less than 20% cover of invasive plant species (see list of invasive species on p. 74).						
	At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed						
	or un-mowed grassland.	Cat. I					
	The wetland is larger than 1/10 acre (4350 square ft.)	Cu. 1					
	YES = Category I NO = Category II	Cat. II					
aac	Interdunal Wetlands (see p. 93)	Cat. 11					
SC6	Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or						
	WBUO)?						
	,						
	<u> </u>						
	If you answer yes you will still need to rate the wetland based on its functions.						
	In practical terms that means the following geographic areas: Long Beach Peninsula lands west of SR 103						
	• Cong Beach Fermisura lands west of SK 105 • Grayland-Westport lands west of SR 105						
	Ocean Shores-Copalis – lands west of SR 115 and SR 109						
	SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is one acre or larger?						
	YES = Category II $\mathbf{NO} = \mathbf{go}$ to SC 6.2	Cat. II					
	SC 6.2 Is the wetland between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre?	Cat. II					
	YES = Category III	Cot III					
-	· · ·	Cat. III					
	Category of wetland based on Special Characteristics						
u	Choose the "highest" rating if wetland falls into several categories, and record on p. 1.						
	If you answered NO for all types enter "Not Applicable" on p. 1						

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users Updated Oct. 2008 with the new WDFW definitions for priority habitats

Name of wetland	(if known): Wetland K – 1042.	0005: Ra	vensdale		Date of s	ite visit:12/0	05/17
Rated by: Emily	Swaim/Richard Peel T	ained by	Ecology? Yes 2	<u>X</u> No	Date of t	raining: <u>3/31</u>	/16
SEC: 01	TWNSHP: 21N	RNGE:	06E	Is S/T/R in A	ppendix D?	Yes	No X
	Map of wetland unit: F	igure <u>1</u>		Estimated siz	ze <u>0.34 Acre</u>	<u>s</u>	
		SUMMA	ARY OF RATIN	IG			
Category based	on FUNCTIONS provided by	vetland:	IV				
C	Category I = Score > 70		Score for Wa	ater Quality F	unctions	10	
Category II = Score 51 - 69			Score for Hydrologic Functions 5				
Category III = Score 30 – 50 Score for Habitat Function				unctions	14		
Cat	tegory IV = Score < 30	TOTAL Score for Functions 29					
Category based o	on SPECIAL CHARACTERIST	CS of We	tland Does n	ot apply			
	Final Catego	ry (choo	ose the "highest"	category from	m above")	IV	
	Summary of basic inf	ormation	about the wetla	and unit.			
	Wetland Unit has Special			HGM Class			
	Characteristics			for Rating	-		
	Estuarine		Depressiona	ll .	X		
	Natural Heritage Wetland		Riverine		[

Summary of Susic militation about the wettand unit.				
Wetland Unit has Special Characteristics		Wetland HGM Class used for Rating		
Estuarine		Depressional		
Natural Heritage Wetland		Riverine		
Bog	Lake-fringe			
Mature Forest Slope				
Old Growth Forest	Flats			
Coastal Lagoon		Freshwater Tidal		
Interdunal				
None of the above	X	Check if unit has multiple HGM classes present		

Does the wetland being rated meet any of the criteria below? If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

	Check List for Wetlands that Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1.	Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered animal or plant species (T/E species)? For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		X
SP2.	Has the wetland unit been documented as habitat for any State listed Threatened or Endangered animal species? For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category 1 Natural Heritage Wetlands (see p. 19 of data form).		X
SP3.	Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?		X
SP4.	Does the wetland unit have a local significance in addition to its functions? For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		X

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

Wetland name or number – Wetland K
The hydrogeomorphic classification groups wetlands in to those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Classification of Vegetated Wetlands for Western Washington

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.

I.	Are the water levels in the entire unit usually controlled by tides (i.e. except during floods)?
	NO – go to 2 YES – the wetland class is Tidal Fringe
	If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?
	YES – Freshwater Tidal Fringe NO – Saltwater Tidal Fringe (Estuarine)
	If your wetland can be classified as a Freshwater Tidal Fringe use the forms for Riverine wetlands. If it is a Saltwater Tidal Fringe it
	is rated as an Estuarine wetland. Wetlands that were call estuarine in the first and second editions of the rating system are called Salt
	Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and
	this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please
	note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p).
)	The entire wetland unit is flat and precipitation is only source (>90%) of water to it. Groundwater and surface water
٠.	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 meet both of the following criteria?
	The vegetated part of the wetland is on the shores of a body of permanent open water (without any
	vegetation on the surface) where at least 20 acres (8ha) in size;
	At least 30% of the open water area is deeper than 6.6 (2 m)?
	NO – go to 4 YES – The wetland class is Lake-fringe (Lacustrine Fringe)
4.	Does the entire wetland 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?
	NOTE: Surface water does not pond in these types of wetlands except occasionally in very small and
	shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 foot deep).
	NO – go to 5 YES – The wetland class is Slope
5.	Does the entire wetland 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 two years.
	NOTE: The riverine unit can contain depressions that are filled with water when the river is not flooding
	NO – go to 6 YES – The wetland class is Riverine
6.	Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time of
	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 located in a very flat area with no obvious depression and no overbank flooding. The unit does not
٠.	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
0	· · ·
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 your wetland. 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 class listed in column 2 is less

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	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of	Treat as ESTUARINE under wetlands with special
freshwater wetland	characteristics

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

than 10% of the unit, classify the wetland using the class that represents more than 90% of the total area.

D	Depressional and Flat Wetlands	Points
D	WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.	(only 1 score
		per box)
D 1	Does the wetland have the <u>potential</u> to improve water quality?	(see p.38)
	D 1.1 Characteristics of surface water flows out of the wetland: Unit is a depression with no surface water leaving it (no outlet)	Figure
	Unit is a "flat" depression (Q.7 on key), or in the Flats class, with permanent surface outflow and no obvious natural outlet and/or outlet is a man-made ditch	2
	D 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic (use NRCS definitions) YES points = 4 NO points = 0	0
	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class): Wetland has persistent, ungrazed vegetation > = 95% of area	Figure
	 Wetland has persistent, ungrazed vegetation > = 1/2 of area	3
	D 1.4 Characteristics of seasonal ponding or inundation: This is the area of the wetland that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 years. Area seasonally ponded is > 1/2 total area of wetland	Figure 3
	• Area seasonally ponded is > 1/4 total area of wetland points = 2 • Area seasonally ponded is < 1/4 total area of wetland points = 0 Map of Hydroperiods	
	Total for D 1 Add the points in the boxes above	5
D 2	Does the wetland have the opportunity to improve water quality? Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity. Grazing in the wetland or within 150 ft Untreated stormwater discharges to wetland	(see p. 44)
	Tilled fields or orchards within 150 ft. of wetland A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging Residential, urban areas, golf courses are within 150 ft. of wetland Wetland is fed by groundwater high in phosphorus or nitrogen X Other Forest practices within 150 feet of wetland YES multiplier is 2 NO multiplier is 1	Multiplier 2
u	TOTAL – Water Quality Functions Multiply the score from D1 by D2; then add score to table on p. 1	10
	HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation.	1
D 3	Does the wetland have the <u>potential</u> to reduce flooding and erosion?	(see p.46)
	D 3.1 Characteristics of surface water flows out of the wetland unit Unit is a depression with no surface water leaving it (no outlet)	2
	D 3.2 Depth of storage during wet periods. Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry). • Marks of ponding are 3 ft. or more above the surface or bottom of the outlet	0
	 Marks of ponding less than 0.5 ft	3
	• Entire unit is in the FLATS class	5

D 4	Does the wetland have the opportunity to reduce flooding and erosion? Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. Note which of the following indicators of opportunity apply. Wetland is in a headwater of a river or stream that has flooding problems. Wetland drains to a river or stream that has flooding problems Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems Other	(see p. 49) Multiplier
	YES multiplier is 2 NO multiplier is 1	
u	<u>TOTAL</u> – Hydrologic Functions Multiply the score from D3 by D4; then <i>add score to table on p. 1</i>	5

D 4: Wetland K flows through a culvert into "Stream Y", which flows into Ravensdale Creek, which flows subsurface through a mined-out pit before reaching any downstream area with documented flooding problems.

R	Riverine and Freshwater Tidal Fringe Wetlands	Points
	WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.	(only 1 score per box)
R 1	Does the wetland have the <u>potential</u> to improve water quality? (see p.52)	
	R 1.1 Area of surface depressions within the riverine wetland that can trap sediments during a flooding event: Depressions cover > 3/4 area of wetland points = 8 Depressions cover > 1/2 area of wetland points = 4 (If depressions > 1/2 of area of unit draw polygons on aerial photo or map) Depressions present but cover < 1/2 area of wetland points = 2 No depressions present points = 0	Figure
	R 1.2 Characteristics of the vegetation in the unit (areas with >90% cover at person height): Trees or shrubs > 2/3 area of the unit points = 8 Trees or shrubs > 1/3 area of the wetland points = 6 Ungrazed, herbaceous plants > 2/3 area of unit points = 3 Ungrazed herbaceous plants > 1/3 area of unit points = 3 Trees, shrubs, and ungrazed herbaceous < 1/3 area of unit points = 0 Aerial photo or map showing polygons of different vegetation types	Figure
	Add the points in the boxes above	
R 2	Does the wetland have the opportunity to improve water quality? Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland. Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity. Grazing in the wetland or within 150 ft Untreated stormwater discharges to wetland Tilled fields or orchards within 150 ft. of wetland A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging	(see p. 53)
	Residential, urban areas, golf courses are within 150 ft. of wetland The river or stream linked to the wetland has a contributing basin where human activities have raised levels of sediment, toxic compounds or nutrients in the river water above standards for water quality. Other YES multiplier is 2 NO multiplier is 1	Multiplier
u	TOTAL – Water Quality Functions Multiply the score from R1 by R2; then add score to table on p. 1	
	HYDROLOGIC FUNCTIONS - Indicators that wetland functions to reduce flooding and stream erosion.	
R 3	Does the wetland have the <u>potential</u> to reduce flooding and erosion?	(see p.54)
	R 3.1 Characteristics of the overbank storage the wetland provides: 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 unit) / (average width of stream between banks). If the ratio is more than 20. points = 9 If the ratio is between 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. Aerial photo or map showing average widths	Figure
	R 3.2 Characteristics of vegetation that slow down water velocities during floods: 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 NOT Cowardin classes): - Forest or shrub for > 1/3 area OR herbaceous plants > 2/3 area	Figure
R 4	Does the wetland have the opportunity to reduce flooding and erosion?	(see p.57)
K 4	Answer YES if the wetland is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Note which of the following conditions apply. There are human structures and activities downstream (roads, buildings, bridges, farms) that can be damaged by flooding. There are natural resources downstream (e.g. salmon redds) that can be damaged by flooding Other (Answer NO if the major source of water to the wetland is controlled by a reservoir or the wetland is tidal fringe along the sides of a dike) YES multiplier is 2 NO multiplier is 1	
	TOTAL - Hydrologic Functions Multiply the score from R3 by R4: then add score to table on n. 1	

L	Lake-fringe Wetlands	Points
	WATER QUALITY FUNCTIONS – Indicators that the wetland unit functions to improve water quality.	(only 1 score
L 1	Does the wetland unit have the <u>potential</u> to improve water quality? (see p.59)	per box)
	L 1.1 Average width of vegetation along the lakeshore (use polygons of Cowardin classes): Vegetation is more than 33 ft. (10m) wide	Figure
	L 1.2 Characteristics of the vegetation 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. NOTE: 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 vegetation that is not aquatic bed or herbaceous covers > 2/3 of the unit points = 3 Other vegetation that is not aquatic bed in > 1/3 vegetated area points = 1 Aquatic bed cover and open water > 2/3 of the unit points = 0 Map with polygons of different vegetation types	Figure
		((1)
L 2	Does the wetland have the opportunity to improve water quality? Answer YES if you know or believe there are pollutants in the lake water, or polluted surface water flowing through the unit to the lake. Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity. Wetland is along the shores of a lake or reservoir that does not meet water quality standards Grazing in the wetland or within 150 ft Polluted water discharges to wetland along upland edge Tilled fields or orchards within 150 ft. of wetland	(see p.61)
	Residential or urban areas are within 150 ft. of wetland Parks with grassy areas that are maintained, ballfields, golf courses (all within 150 ft. of lake shore) Power boats with gasoline or diesel engines use the lake Other YES multiplier is 2 NO multiplier is 1	Multiplier
u	TOTAL – Water Quality Functions Multiply the score from L1 by L2; then add score to table on p. 1	
	HYDROLOGIC FUNCTIONS – Indicators that wetland functions to reduce shoreline erosion.	
L 3	Does the wetland have the potential to reduce shoreline erosion?	(see p.62)
	L 3 Average width and characteristics of vegetation along the lakeshore (do not include aquatic bed): (choose the highest scoring description that matches conditions in the wetland) 3/4 of distance is shrubs or forest at least 33 ft. (10m) wide	Figure
	Vegetation is at least 6 ft. (2m) wide (any type except aquatic bed) points = 2 Vegetation is less than 6 ft. (2m) wide (any type except aquatic bed) points = 0	
	Aerial photo or map with Cowardin vegetation classes	
	Record the points in the boxes above	
L 4	Does the wetland have the opportunity to reduce erosion?	(see p. 64)
	Are there features along the shore that will be impacted if the shoreline erodes? Note which of the following conditions apply. There are human structures and activities along the upland edge of the wetland (buildings, fields) that can be damaged by erosion. There are undisturbed natural resources along the upland edge of the wetland (e.g. mature forests, other wetlands) that can be damaged by shoreline erosion. Other	Multiplier
-	YES multiplier is 2 NO multiplier is 1	
u	TOTAL – Hydrologic Functions Multiply the score from L3 by L4; then add score to table on p. 1	

S	Slope Wetlands	Points
	WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.	(only 1 score
S 1	Does the wetland have the <u>potential</u> to improve water quality?	per box) (see p.64)
	S 1.1 Characteristics of average slope of unit: Slope is 1% or less (a 1% slope has a 1 ft. vertical drop in elevation for every 100 ft. horizontal distance)	
	S 1.2 The soil 2 inches below the surface (or duff layer) is clay, organic (<i>Use NRCS definitions</i>). YES = 3 points NO = 0 points	
	S 1.3 Characteristics of the vegetation in the wetland that trap sediments and pollutants: Choose the points appropriate for the description that best fits the vegetation in the wetland. Dense vegetation means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or moved and plants are higher than 6 inches. Dense, uncut, herbaceous vegetation > 90% of the wetland area	Figure
	• Does not meet any of the criteria above for vegetation	
	Total for S 1 Add the points in the boxes above	
S 2	Does the wetland have the opportunity to improve water quality?	(see p. 67)
5 2	Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity. Grazing in the wetland or within 150 ft	(,
	Untreated stormwater discharges to wetland Tilled fields, logging, or orchards within 150 ft. of wetland Residential, urban areas, or golf courses are within 150 ft. upslope of wetland Other YES multiplier is 2 NO multiplier is 1	Multiplier
u	TOTAL – Water Quality Functions Multiply the score from S1 by S2; then add score to table on p. 1	
	HYDROLOGIC FUNCTIONS – Indicators that wetland functions to reduce flooding and stream erosion.	
S 3	Does the wetland have the potential to reduce flooding and stream erosion?	(see p.68)
	S 3.1 Characteristics of vegetation that reduce the velocity of surface flows during storms: Choose the points appropriate for the description that best fits conditions in the wetland (stems of plants should be thick enough (usually > 1/8in), or dense enough to remain erect during surface flows). • Dense, uncut, rigid vegetation covers > 90% of the area of the wetland points = 6 • Dense, uncut, rigid vegetation > 1/2 area of wetland points = 3 • Dense, uncut, rigid vegetation > 1/4 area of wetland points = 1 • More than 1/4 of area is grazed, mowed, tilled, or vegetation is not rigid points = 0	
	S 3.2 Characteristics of slope wetland that holds back small amounts of flood flows. The slope has small surface depressions that can retain water over at least 10% of its area. YES = 2 points NO = 0 points	
	Add the points in the boxes above	
S 4	Does the wetland have the <u>opportunity</u> to reduce flooding and erosion? Is the wetland in a landscape position where the reduction in water velocity it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows? <i>Note which of the following conditions apply.</i> Wetland has surface runoff that drains to a river or stream that has flooding problems	(see p. 70)
u	Other (Answer NO if the major source of water is controlled by a reservoir (e.g. wetland is a seep that is on the downstream side of a dam) YES multiplier is 2 NO multiplier is 1 TOTAL – Hydrologic Functions Multiply the score from S3 by S4; then add score to table on p. 1	Multiplier

	se questi	ions apply to wetlands of all HGM classes.	Points
	HABIT	TAT FUNCTIONS – Indicators that wetland functions to provide important habitat.	(only 1 scor per box)
H 1	Does t	he wetland have the <u>potential</u> to provide habitat for many species?	
	H 1.1	Vegetation structure (see P. 72): Check the types of vegetation classes present (as defined by Cowardin) – Size threshold for each class is 1/4 acre or more than 10% of the area if unit is smaller than 2.5 acres. Aquatic Bed Emergent plants X Scrub/shrub (areas where shrubs have > 30% cover) Forested (areas where trees have > 30% cover) If the unit has a forested class check if: The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-	Figure 1
		cover) that each cover 20% within the forested polygon. Add the number of vegetation types that qualify. If you have: 4 structures or morepoints = 4 2 structurespoints = 1 1 structurepoints = 0	
	Н 1.2	Hydroperiods (see p.73): Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or 1/4 acre to count (see text for descriptions of hydroperiods). Permanently flooded or inundated 4 or more types present points = 3 Seasonally flooded or inundated 3 or more types present points = 2 Occasionally flooded or inundated 2 types present points = 1 X Saturated only 1 type present points = 0 X Permanently flowing stream or river in, or adjacent to, the wetland Seasonally flowing stream in, or adjacent to, the wetland Lake-fringe wetland 2 points	Figure 2
		Freshwater tidal wetland 2 points Map of hydroperiods	
	Н 1.3	Richness of Plant Species (see p. 75): 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) You do not have to name the species. Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle. If you counted: > 19 speciespoints = 2 5 - 19 speciespoints = 1 List species below if you want to: < 5 speciespoints = 0	1
	H 1.4	Interspersion of Habitats (see p. 76): Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.	
	Н 1.4	Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or	Figure
	Н 1.4	Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none. Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always "high". Use map of Cowardin classes.	0
	H 1.4	Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none. Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always "high". Use map of Cowardin classes.	0

H 2	Does t	he wetland have the opportunity to provide habitat for many species?	(only 1 score per box)
	H 2.1	Buffers (see P. 80): Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed". 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% of circumference. No structures are within the undisturbed path obuffer (relatively undisturbed also means no grazing, no landscaping, no daily human use). points = 5 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference	Figure 2
	H 2.2	Corridors and Connections (see p. 81) H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft. wide, has at least a 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (Dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor). YES = 4 points (go to H 2.3) NO = go to H 2.2.2 H. 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50 ft. wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? OR a Lakefringe wetland, if it does not have an undisturbed corridor as in the question above? YES = 2 points (go to H 2.3) NO = go to H 2.2.3 H. 2.2.3 Is the wetland: Within 5 mi (8km) of a brackish or salt water estuary OR Within 3 miles of a large field or pasture (> 40 acres) OR Within 1 mile of a lake greater than 20 acres? NO = 0 points	0

- H 2.1: The actively managed forestlands surrounding Wetland K do not meet the definition of "relatively undisturbed". Disturbance includes access roads, un-reclaimed coal strip mines, managed forest lands, dense populations of invasive vegetation (e.g., Himalayan blackberry and Scotch broom), et cetera.
- H 2.2: Wetland K is not part of a relatively undisturbed and unbroken vegetated corridor. The nearest brackish or saltwater estuary would be greater than 20 miles away. No 40-acre field or pastures have been identified within 3 miles. The nearest lake that is greater than 20 acres in size is Lake No. 12 which is greater than 1 mile away to the south.

	TOTAL for H 1 from page 8	5
		9
	·	9
	• There are no wetlands within 1/2 mile	
	within 1/2 milepoints = 3 There is at least 1 wetland within 1/2 milepoints = 2	
	• The wetland fringe on a lake with disturbance and there are 3 other lake-fringe wetlands	
	disturbedpoints = 3	
	· There are at least 3 other wetlands within 1/2 mile, BUT the connections between them are	3
	wetlands within 1/2 milepoints = 5	
	but connections should NOT be bisected by paved roads, fill, fields, or other development points = 5 The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe	
	relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating,	
	There are at least 3 other wetlands within 1/2 mile, and the connections between them are	
Ī	H 2.4 Wetland Landscape: Choose the one description of the landscape around the wetland that best fits (see p. 84)	
	addressed in question H 2.4)	
	Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are	
	If wetland has 2 priority habitats = 3 points If wetland has 1 priority habitat = 1 point No habitats = 0 points	
	If wetland has 3 or more priority habitats = 4 points If wetland has 2 priority habitats = 3 points	
	end, and > 6 m (20 ft) long.	
	western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30 cm (12 in) in diameter at the largest	
	to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 51 cm (20 in) in	
	X Snags and Logs: Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics	
	andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.	
	Cliffs: Greater than 7.6 m (25 ft) high and occurring below 5000 ft Talus: Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt,	
	rock, ice, or other geological formations and is large enough to contain a human.	
	Caves: A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils,	
	WDFW report: pp. 167-169 and glossary in Appendix A).	
	and Puget Sound Nearshore. (full descriptions of habitats and the definition of relatively undisturbed are in	
	provide functional life history requirements for instream fish and wildlife resources. Nearshore: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore,	
	X 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.	
	a wet prairie (full descriptions in WDFW PHS report p. 161).	4
	Westside Prairies: Herbaceous, non-forested plant communities that can either take the form of a dry prairie or	
	terrestrial ecosystems which mutually influence each other.	
	X Riparian: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and	
	Oregon white Oak: Woodlands 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).	
	generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest.	
	cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is	
	dbh or > 200 years of age. (Mature forests) Stands with average diameters exceeding 53 cm (21 in) dbh; crown	
	multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in)	
	Old-growth/Mature forests: (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a	
	fish and wildlife (<i>full descriptions in WDFW PHS report p. 152</i>). Herbaceous Balds: Variable size patches of grass and forbs on shallow soils over bedrock.	
	Biodiversity Areas and Corridors: Areas of habitat that are relatively important to various species of native	
	Aspen Stands: Pure or mixed stands of aspen greater than 0.4 ha (1 acre).	
	NOTE: the connections do not have to be relatively undisturbed.	
	Which of the following priority habitats are within 330 ft. (100m) of the wetland unit?	
	descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report http://wdfw.wa.gov/hab/phslist.htm)	

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

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

	Wetland Type – Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.	
SC1	Estuarine wetlands? (see p.86)	
SCI	Does the wetland unit meet the following criteria for Estuarine wetlands?	
	The dominant water regime is tidal,	
	Vegetated, and	
	With a salinity greater than 0.5 ppt.	
	YES = Go to SC 1.1	
	SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC	Cat. 1
	332-30-151? YES = Category I NO = go to SC 1.2	Cat. 1
	SC 1.2 Is the wetland at least 1 acre in size and meets at least two of the following conditions?	
	YES = Category I NO = Category II	Cat. I
	The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has	Cat. I
	less than 10% cover of non-native plant species. If the non-native Spartina spp., are only species	Cat. II
	that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh	Cu., 11
	with native species would be a Category 1. Do not, however, exclude the area of Spartina in	
	determining the size threshold of 1 acre.	Dual
	At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland	Rating
	The wetland has at least 2 of the following features: tidal channels, depressions with open water,	I/II
	or contiguous freshwater wetlands.	
SC2	Natural Heritage Wetlands (see p. 87) Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as	
	either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or	
	Sensitive plant species.	
	SC 2.1 Is the wetland being rated in a Section/Township/Range that contains a natural heritage wetland? (<i>This</i>	
	question is used to screen out most sites before you need to contact WNHP/DNR.)	
	S/T/R information from Appendix D or accessed from WNHP/DNR web site	
	YES Contact WNHP/DNR (see p. 79) and go to SC 2.2 NO \underline{X}	
	SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as a site with state threatened	
	or endangered plant species?	Cat I
	$\mathbf{YES} = \mathbf{Category 1} \qquad \qquad \mathbf{NO} \ \underline{\mathbf{X}} \qquad \text{not a Heritage Wetland}$	
SC3	Bogs (see p. 87) Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? Use	
	the key below to identify if the wetland is a bog. If you answer yes you will still need to rate the	
	wetland based on its function.	
	1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that	
	compose 16 inches or more of the first 32 inches of soil profile? (See Appendix B for a field key to	
	identify organic soils)? YES = go to question 3 \mathbf{NO} = go to question 2	
	2. Does the wetland have organic soils, either peats or mucks that are less than 16 inches deep over	
	bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? YES = go to question 3 NO = is not a bog for purpose of rating	
	pond? YES = go to question 3 NO = is not a bog for purpose of rating 3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present,	
	consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more	
	than 30% of the total shrub and herbaceous cover consists of species in Table 3)?	
	YES = Is a bog for purpose of rating $NO = $ go to question 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" deep. If the pH is	
	less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog.	
	4. Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western	
	hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine. WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant	
	component of the ground cover (> 30% coverage of the total shrub/herbaceous cover)?	Cat. I
	YES = Category I $NO = Is \text{ not a bog for purpose of rating}$	Cal. I

SC4	Forested Wetlands (see p. 90)	
	Does the wetland have at least 1 acre of forest that meet one of these criteria for the Department of Fish	
	and Wildlife's forests as priority habitats? If you answer yes you will still need to rate the wetland	
	based on its function.	
	Old-growth forests: (west of Cascade Crest) Stands of at least two three species forming a	
	multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare)	
	that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm or	
	more).	
	NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees	
	in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW	
	criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter.	
	Mature forests: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old	
	OR have an average diameters (dbh) exceeding 21 inches (53 cm); 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.	Cat. I
	YES = Category I NO = \underline{X} not a forested wetland with special characteristics	
SC5	Wetlands in Coastal Lagoons (see p. 91)	
BCS	Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?	
	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 surface water that is saline or brackish (> 0.5	
	ppt) during most of the year in at least a portion of the lagoon (needs to be measured near the	
	bottom.)	
	YES = Go to SC 5.1 NO \underline{X} not a wetland in a coastal lagoon	
	SC 5.1 Does the wetland meet all of the following three conditions?	
	The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing) and has	
	less than 20% cover of invasive plant species (see list of invasive species on p. 74).	
	At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed	
	or un-mowed grassland.	Cat. I
	The wetland is larger than 1/10 acre (4350 square ft.)	O 1
	YES = Category I NO = Category II	Cat. II
SC6	Interdunal Wetlands (see p. 93)	
SCU	Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or	
	WBUO)?	
	YES = Go to SC 6.1 NO \underline{X} not an interdunal wetland for rating	
	If you answer yes you will still need to rate the wetland based on its functions.	
	In practical terms that means the following geographic areas:	
	· 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	
	SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is one acre or larger?	
	YES = Category II NO = go to SC 6.2	Cat. II
	SC 6.2 Is the wetland between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre?	C 4 III
	YES = Category III	Cat. III
	Category of wetland based on Special Characteristics	
u	Choose the "highest" rating if wetland falls into several categories, and record on p. 1.	
	If you answered NO for all types enter "Not Applicable" on p. 1	

WETLAND RATING FORM - WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users Updated Oct. 2008 with the new WDFW definitions for priority habitats

Name of wetland (if known): Wetland L –	1042.0005: Ravensdale	Date of s	ite visit: <u>12/05/17</u>
Rated by: Richard Peel	Trained by Ecology?	Yes X No Date of to	raining: <u>9/29/16</u>
SEC: 01 TWNSHP: 21N	RNGE: 06E	Is S/T/R in Appendix D?	Yes No X
Map of wetland u	ınit: Figure <u>1</u>	Estimated size <u>0.30 Acre</u>	<u>s</u>
	SUMMARY OF RA	ATING	
Category based on FUNCTIONS provide	ed by wetland: IV		
Category I = Score > 70	Score fo	or Water Quality Functions	8
Category II = Score 51 - 6	9 Scor	e for Hydrologic Functions	4
Category III = Score 30 – 5	50	Score for Habitat Functions	11
Category IV = Score < 30	T	OTAL Score for Functions	23
Category based on SPECIAL CHARACTE	ERISTCS of Wetland D	oes not apply	
Final Ca	ntegory (choose the "hig	hest" category from above")	IV
Summary of ba	sic information about the	wetland unit.	
Wetland Unit has S	•	tland HGM Class	
Characteristics Estuarine	Depres	sional X	

Summary of Dasic Information		
Wetland Unit has Special		
Characteristics		
Estuarine		
Natural Heritage Wetland		
Bog		
Mature Forest		
Old Growth Forest		
Coastal Lagoon		
Interdunal		
None of the above	X	

Wetland HGM Class used for Rating	
Depressional	X
Riverine	
Lake-fringe	
Slope	
Flats	
Freshwater Tidal	
Check if unit has multiple HGM classes present	

Does the wetland being rated meet any of the criteria below? If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

	Check List for Wetlands that Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1.	Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered animal or plant species (T/E species)? For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		X
SP2.	Has the wetland unit been documented as habitat for any State listed Threatened or Endangered animal species? For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category 1 Natural Heritage Wetlands (see p. 19 of data form).		X
SP3.	Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?		X
SP4.	Does the wetland unit have a local significance in addition to its functions? For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		X

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

Wetland name or number – Wetland L

The hydrogeomorphic classification groups wetlands in to those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Classification of Vegetated Wetlands for Western Washington

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 (i.e. except during floods)? NO – go to 2 YES – the wetland class is Tidal Fringe
	If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)? YES – Freshwater Tidal Fringe NO – Saltwater Tidal Fringe (Estuarine)
	If your wetland can be classified as a Freshwater Tidal Fringe use the forms for Riverine wetlands. If it is a Saltwater Tidal Fringe it is rated as an Estuarine wetland. Wetlands that were call estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and
	this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p).
2.	The entire wetland unit is flat and precipitation is 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.	The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) where at least 20 acres (8ha) in size;
	At least 30% of the open water area is deeper than 6.6 (2 m)? NO – go to 4 YES – The wetland class is Lake-fringe (Lacustrine Fringe)
4.	Does the entire wetland 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? NOTE: Surface water does not pond in these types of wetlands except occasionally in very small and
	shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 foot deep). NO – go to 5 YES – The wetland class is Slope
5.	Does the entire wetland 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 two years.
	NOTE: The riverine unit can contain depressions that are filled with water when the river is not flooding NO – go to 6 YES – The wetland class is Riverine
6.	Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time of 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 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 your wetland. 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 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	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of	Treat as ESTUARINE under wetlands with special
freshwater wetland	characteristics

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

D	Depressional and Flat Wetlands	Points
	WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.	(only 1 score
D 1		per box) $(see p.38)$
ו ע	D 1.1 Characteristics of surface water flows out of the wetland:	(see p.30)
	Unit is a depression with no surface water leaving it (no outlet)	Figure
	Unit has an unconstricted, or slightly constricted, surface outlet (permanently flowing) points = 1	
	Unit is a "flat" depression (Q.7 on key), or in the Flats class, with permanent surface	1
	outflow and no obvious natural outlet and/or outlet is a man-made ditch	
	D 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic (use NRCS definitions)	0
	YES points = 4 NO points = 0	U
	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class): Wetland has persistent, ungrazed vegetation > = 95% of area	Figure
	• Wetland has persistent, ungrazed vegetation > = 1/2 of area	3
	Wetland has persistent, ungrazed vegetation $> 1/10$ of area	3
	• Wetland has persistent, ungrazed vegetation < 1/10 of area	
	D 1.4 Characteristics of seasonal ponding or inundation: This is the area of the wetland that is ponded for at	T. 4
	least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 years.	Figure 3
	Area seasonally ponded is > 1/2 total area of wetland	0
	• Area seasonally ponded is > 1/4 total area of wetland	
	• Area seasonally ponded is < 1/4 total area of wetland	
	Total for D 1 Add the points in the boxes above	4
D 2	Does the wetland have the opportunity to improve water quality?	(see p. 44)
D 2	Answer YES if you know or believe there are pollutants in groundwater or surface water coming into	(see p. 44)
	the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient	
	from the wetland? Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.	
	Grazing in the wetland or within 150 ft	
	Untreated stormwater discharges to wetland	
	Tilled fields or orchards within 150 ft. of wetland A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed	
	fields, roads, or clear-cut logging	3.6.1.1.11
	Residential, urban areas, golf courses are within 150 ft. of wetland	Multiplier
	Wetland is fed by groundwater high in phosphorus or nitrogen X Other Forest practices within 150 feet of wetland	2
	YES multiplier is 2 NO multiplier is 1	
u	TOTAL – Water Quality Functions Multiply the score from D1 by D2; then add score to table on p. 1	8
	HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation.	1
D 3		(see p.46)
	D 3.1 Characteristics of surface water flows out of the wetland unit	
	 Unit is a depression with no surface water leaving it (no outlet)	
	Unit is a "flat" depression (Q.7 on key) or in the Flats class, with permanent surface	1
	outflow and no obvious natural outlet and/or outlet is a man-made ditch	
	(If ditch is not permanently flowing treat unit as "intermittently flowing") Unit has an unconstricted, or slightly constricted, surface outlet (permanently flowing) points = 0	
	D 3.2 Depth of storage during wet periods. Estimate the height of ponding above the bottom of the outlet. For	
	units with no outlet measure from the surface of permanent water or deepest part (if dry).	
	 Marks of ponding are 3 ft. or more above the surface or bottom of the outlet	
	• Marks of ponding between 2 ft. to < 3 ft. from surface or bottom of outlet	0
	• Marks are at least 0.5 ft. to < 2 ft. from surface or bottom of outlet	
	• Wetland is flat (yes to Q.2 or Q.7 on key)but has small depressions on the surface that trap water points = 1	
	 Wetland is flat (yes to Q.2 or Q.7 on key)but has small depressions on the surface that trap water points = 1 Marks of ponding less than 0.5 ft	
	 Wetland is flat (yes to Q.2 or Q.7 on key)but has small depressions on the surface that trap water points = 1 Marks of ponding less than 0.5 ft	
	 Wetland is flat (yes to Q.2 or Q.7 on key)but has small depressions on the surface that trap water points = 1 Marks of ponding less than 0.5 ft	3
	 Wetland is flat (yes to Q.2 or Q.7 on key)but has small depressions on the surface that trap water points = 1 Marks of ponding less than 0.5 ft	3
	 Wetland is flat (yes to Q.2 or Q.7 on key)but has small depressions on the surface that trap water points = 1 Marks of ponding less than 0.5 ft	3

D 4	Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. <i>Note which of the following</i>	
	indicators of opportunity apply. Wetland is in a headwater of a river or stream that has flooding problems. Wetland drains to a river or stream that has flooding problems Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems Other YES multiplier is 2 NO multiplier is 1	
u	TOTAL – Hydrologic Functions Multiply the score from D3 by D4; then add score to table on p. 1	4

 $\ \, D \ \, 4: We tland \ \, L \ \, is \ \, upgradient \ \, of \ \, Ravens dale \ \, Creek, \ \, which \ \, flows \ \, subsurface \ \, through \ \, a \ \, mined-out \ \, pit \ \, before \ \, reaching \ \, any \ \, downstream \ \, area \ \, with \ \, documented \ \, flooding \ \, problems.$

R	Riverine and Freshwater Tidal Fringe Wetlands	Points
	WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.	(only 1 score per box)
R 1	Does the wetland have the <u>potential</u> to improve water quality? (see p.52)	
	R 1.1 Area of surface depressions within the riverine wetland that can trap sediments during a flooding event: Depressions cover > 3/4 area of wetland points = 8 Depressions cover > 1/2 area of wetland points = 4 (If depressions > 1/2 of area of unit draw polygons on aerial photo or map) Depressions present but cover < 1/2 area of wetland points = 2 No depressions present points = 0	Figure
	R 1.2 Characteristics of the vegetation in the unit (areas with >90% cover at person height): Trees or shrubs > 2/3 area of the unit	Figure
	Add the points in the boxes above	
R 2	Does the wetland have the opportunity to improve water quality? Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland. Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity. Grazing in the wetland or within 150 ft Untreated stormwater discharges to wetland Tilled fields or orchards within 150 ft. of wetland A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed	(see p. 53)
	fields, roads, or clear-cut logging Residential, urban areas, golf courses are within 150 ft. of wetland The river or stream linked to the wetland has a contributing basin where human activities have raised levels of sediment, toxic compounds or nutrients in the river water above standards for water quality. Other YES multiplier is 2 NO multiplier is 1	Multiplier
u	TOTAL - Water Quality Functions Multiply the score from R1 by R2; then add score to table on p. 1	
	HYDROLOGIC FUNCTIONS – Indicators that wetland functions to reduce flooding and stream erosion.	
R 3	Does the wetland have the <u>potential</u> to reduce flooding and erosion?	(see p.54)
	R 3.1 Characteristics of the overbank storage the wetland provides: 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 unit) / (average width of stream between banks). If the ratio is more than 20	Figure
	R 3.2 Characteristics of vegetation that slow down water velocities during floods: 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 NOT Cowardin classes): - Forest or shrub for > 1/3 area OR herbaceous plants > 2/3 area	Figure
	Add the points in the boxes above	
R 4	Does the wetland have the opportunity to reduce flooding and erosion? Answer YES if the wetland is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Note which of the following conditions apply. There are human structures and activities downstream (roads, buildings, bridges, farms) that can be damaged by flooding. There are natural resources downstream (e.g. salmon redds) that can be damaged by flooding Other	(see p.57) Multiplier
	(Answer NO if the major source of water to the wetland is controlled by a reservoir or the wetland is tidal fringe along the sides of a dike) YES multiplier is 2 NO multiplier is 1 TOTAL Hydrologic Functions Multiply the score from P3 by P4: then add score to table on p. 1.	

L	Lake-fringe Wetlands	Points
	WATER QUALITY FUNCTIONS – Indicators that the wetland unit functions to improve water quality.	(only 1 score
L 1	Does the wetland unit have the <u>potential</u> to improve water quality? (see p.59)	per box)
	L 1.1 Average width of vegetation along the lakeshore (use polygons of Cowardin classes): Vegetation is more than 33 ft. (10m) wide	Figure
	L 1.2 Characteristics of the vegetation 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. NOTE: 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 vegetation that is not aquatic bed or herbaceous covers > 2/3 of the unit points = 3 Other vegetation that is not aquatic bed in > 1/3 vegetated area points = 1 Aquatic bed cover and open water > 2/3 of the unit points in the boxes above	Figure
T 2	Does the wetland have the opportunity to improve water quality?	(goon 61)
L 2	Answer YES if you know or believe there are pollutants in the lake water, or polluted surface water flowing through the unit to the lake. Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity. Wetland is along the shores of a lake or reservoir that does not meet water quality standards Grazing in the wetland or within 150 ft Polluted water discharges to wetland along upland edge Tilled fields or orchards within 150 ft. of wetland Residential or urban areas are within 150 ft. of wetland Parks with grassy areas that are maintained, ballfields, golf courses (all within 150 ft. of lake shore)	(see p.61) Multiplier
	Power boats with gasoline or diesel engines use the lake Other YES multiplier is 2 NO multiplier is 1	
u	TOTAL – Water Quality Functions Multiply the score from L1 by L2; then add score to table on p. 1	
_	HYDROLOGIC FUNCTIONS – Indicators that wetland functions to reduce shoreline erosion.	
L 3	Does the wetland have the <u>potential</u> to reduce shoreline erosion?	(see p.62)
	L 3 Average width and characteristics of vegetation along the lakeshore (do not include aquatic bed): (choose the highest scoring description that matches conditions in the wetland) 3/4 of distance is shrubs or forest at least 33 ft. (10m) wide	Figure
	• Vegetation is less than 6 ft. (2m) wide (any type except aquatic bed)	
	Record the points in the boxes above	
L 4	Does the wetland have the opportunity to reduce erosion?	(see p. 64)
	Are there features along the shore that will be impacted if the shoreline erodes? Note which of the following conditions apply. There are human structures and activities along the upland edge of the wetland (buildings, fields) that can be damaged by erosion. There are undisturbed natural resources along the upland edge of the wetland (e.g. mature forests, other wetlands) that can be damaged by shoreline erosion. Other	Multiplier
	YES multiplier is 2 NO multiplier is 1 TOTAL Hydrologic Functions Multiply the seems from 1.2 by 1.4; then add seems to table on n. 1.	
u	TOTAL – Hydrologic Functions Multiply the score from L3 by L4; then add score to table on p. 1	

S	Slope Wetlands	Points
	WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.	(only 1 score per box)
S 1	Does the wetland have the <u>potential</u> to improve water quality?	(see p.64)
	S 1.1 Characteristics of average slope of unit: Slope is 1% or less (a 1% slope has a 1 ft. vertical drop in elevation for every 100 ft. horizontal distance)	
	S 1.2 The soil 2 inches below the surface (or duff layer) is clay, organic (<i>Use NRCS definitions</i>).	
	YES = 3 points NO = 0 points S 1.3 Characteristics of the vegetation in the wetland that trap sediments and pollutants: Choose the points	
	S 1.3 Characteristics of the vegetation in the wetland that trap sediments and pollutants: Choose the points appropriate for the description that best fits the vegetation in the wetland. Dense vegetation means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 inches. Dense, uncut, herbaceous vegetation > 90% of the wetland area points = 6. Dense, uncut, herbaceous vegetation > 1/2 of area points = 3.	Figure
	Dense, woody, vegetation > 1/2 of area. points = 2	
	Dense, uncut, herbaceous vegetation > 1/4 of area points = 1	
	• Does not meet any of the criteria above for vegetation	
	Total for S 1 Add the points in the boxes above	i
S 2	Does the wetland have the opportunity to improve water quality?	(see p. 67)
5 2	Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity. Grazing in the wetland or within 150 ft	
	Untreated stormwater discharges to wetland Tilled fields, logging, or orchards within 150 ft. of wetland Residential, urban areas, or golf courses are within 150 ft. upslope of wetland Other YES multiplier is 2 NO multiplier is 1	Multiplier
u	TOTAL – Water Quality Functions Multiply the score from S1 by S2; then add score to table on p. 1	
	HYDROLOGIC FUNCTIONS – Indicators that wetland functions to reduce flooding and stream erosion.	
S 3	Does the wetland have the potential to reduce flooding and stream erosion?	(see p.68)
	S 3.1 Characteristics of vegetation that reduce the velocity of surface flows during storms: Choose the points appropriate for the description that best fits conditions in the wetland (stems of plants should be thick enough (usually > 1/8in), or dense enough to remain erect during surface flows). • Dense, uncut, rigid vegetation covers > 90% of the area of the wetland points = 6 • Dense, uncut, rigid vegetation > 1/2 area of wetland points = 3 • Dense, uncut, rigid vegetation > 1/4 area points = 1 • More than 1/4 of area is grazed, mowed, tilled, or vegetation is not rigid points = 0	-
	S 3.2 Characteristics of slope wetland that holds back small amounts of flood flows. The slope has small surface depressions that can retain water over at least 10% of its area. YES = 2 points NO = 0 points	
	Add the points in the boxes above	
S 4	Does the wetland have the opportunity to reduce flooding and erosion?	(see p. 70)
	Is the wetland in a landscape position where the reduction in water velocity it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows? Note which of the following conditions apply. Wetland has surface runoff that drains to a river or stream that has flooding problems Other [Answer NO if the major source of water is controlled by a reservoir (e.g. wetland is a seep that is on	Multiplier
	the downstream side of a dam) YES multiplier is 2 NO multiplier is 1	
u	TOTAL – Hydrologic Functions Multiply the score from S3 by S4; then add score to table on p. 1	

These questions apply to wetlands of all HGM classes.		Points	
	НАВІТ	ΓΑΤ FUNCTIONS – Indicators that wetland functions to provide important habitat.	(only 1 scor per box)
H 1	Does th	he wetland have the <u>potential</u> to provide habitat for many species?	,
	Н 1.1	Vegetation structure (see P. 72): Check the types of vegetation classes present (as defined by Cowardin) – Size threshold for each class is 1/4 acre or more than 10% of the area if unit is smaller than 2.5 acres. Aquatic Bed X Emergent plants X Scrub/shrub (areas where shrubs have > 30% cover) Forested (areas where trees have > 30% cover) If the unit has a forested class check if: 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. Add the number of vegetation types that qualify. If you have: 4 structures or morepoints = 4 Map of Cowardin vegetation classes 3 structures	Figure 1
	H 1.2	2 structurespoints = 1 Hydroperiods (see p.73): Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or 1/4 acre to count (see text for descriptions of hydroperiods). Permanently flooded or inundated Seasonally flooded or inundated Occasionally flooded or inundated 2 types present points = 2 Occasionally flooded or inundated 2 types present points = 1 X Saturated only Permanently flowing stream or river in, or adjacent to, the wetland Seasonally flowing stream in, or adjacent to, the wetland Lake-fringe wetland	Figure 2
		Freshwater tidal wetland 2 points Map of hydroperiods	
	Н 1.3	Richness of Plant Species (see p. 75): 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) You do not have to name the species. Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle. If you counted: > 19 speciespoints = 2 5 - 19 speciespoints = 1	1
		List species below if you want to: <pre></pre>	
	H 1.4		
	H 1.4	List species below if you want to: < 5 speciespoints = 0 Interspersion of Habitats (see p. 76): Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or	Figure
	H 1.4	Interspersion of Habitats (see p. 76): Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none. Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always "high". Use map of Cowardin classes. Use map of Cowardin classes.	Figure 1
	H 1.4	Interspersion of Habitats (see p. 76): Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none. Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always "high". Use map of Cowardin classes. Use map of Cowardin classes.	Figure 1

H 2	Does t	he wetland have the opportunity to provide habitat for many species?	(only 1 score per box)
	H 2.1	Buffers (see P. 80): Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed". 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% of circumference. No structures are within the undisturbed part of buffer (relatively undisturbed also means no grazing, no landscaping, no daily human use). points = 5 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference	Figure 2
	H 2.2	Corridors and Connections (see p. 81) H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft. wide, has at least a 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (Dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor). YES = 4 points (go to H 2.3) NO = go to H 2.2.2 H. 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50 ft. wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? OR a Lakefringe wetland, if it does not have an undisturbed corridor as in the question above? YES = 2 points (go to H 2.3) NO = go to H 2.2.3 H. 2.2.3 Is the wetland: Within 5 mi (8km) of a brackish or salt water estuary OR Within 3 miles of a large field or pasture (> 40 acres) OR West = 1 point NO = 0 points	0

- H 2.1: The actively managed forestlands surrounding Wetland L do not meet the definition of "relatively undisturbed". Disturbance includes access roads, un-reclaimed coal strip mines, managed forest lands, dense populations of invasive vegetation (e.g., Himalayan blackberry and Scotch broom), et cetera.
- H 2.2: Wetland L is not part of a relatively undisturbed and unbroken vegetated corridor. The nearest brackish or saltwater estuary would be greater than 20 miles away. No 40-acre field or pastures have been identified within 3 miles. The nearest lake that is greater than 20 acres in size is Lake No. 12 which is greater than 1 mile away to the south.

 Aspen Stands: Pure or mixed stands of aspen greater than 0.4 ha (1 acre). 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 p. 152). Herbaceous Balds: Variable size patches of grass and forbs on shallow soils over bedrock. 	
fish and wildlife (full descriptions in WDFW PHS report p. 152).	
Harbacous Ralds. Variable size natches of grass and forbs on shallow soils over hadrock	
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 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age. (Mature forests) Stands with average diameters exceeding 53 cm (21 in) dbh; crown	
cover may be less that 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: Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (<i>full descriptions in WDFW PHS report p. 158</i>).	
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).	1
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: pp. 167-169 and glossary in Appendix A). 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 7.6 m (25 ft) high and occurring below 5000 ft.	
Talus: Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt,	
andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs. X 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 > 51 cm (20 in) in	
western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30 cm (12 in) in diameter at the largest	
end, and > 6 m (20 ft) long.	
If wetland has 3 or more priority habitats = 4 points If wetland has 2 priority habitats = 3 points	
If wetland has 1 priority habitat = 1 point No habitats = 0 points	
Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are	
addressed in question H 2.4)	
H 2.4 Wetland Landscape: Choose the one description of the landscape around the wetland that best fits (see p. 84) There are at least 3 other wetlands within 1/2 mile, and the connections between them are	
relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating,	
but connections should NOT be bisected by paved roads, fill, fields, or other developmentpoints = 5	
The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe	
wetlands within 1/2 milepoints = 5	3
• There are at least 3 other wetlands within 1/2 mile, BUT the connections between them are	5
disturbedpoints = 3 The wetland fringe on a lake with disturbance and there are 3 other lake-fringe wetlands	
within 1/2 milepoints = 3	
1	
• There is at least 1 wetland within 1/2 mile	
 There is at least 1 wetland within 1/2 mile	
1	6
• There are no wetlands within 1/2 milepoints = 0	6 5

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

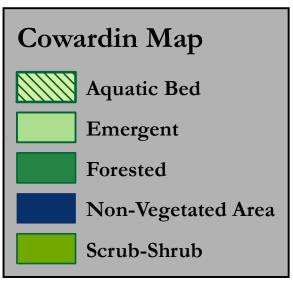
Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

	Wetland Type – Check off any criteria that apply to the wetland. Circle the Category when the appropriate	
	criteria are met.	
SC1	Estuarine wetlands? (see p.86)	
	Does the wetland unit meet the following criteria for Estuarine wetlands? The dominant water regime is tidal,	
	Vegetated, and	
	With a salinity greater than 0.5 ppt.	
	$\mathbf{YES} = \mathbf{Go \ to \ SC \ 1.1} \qquad \mathbf{NO} \mathbf{X}$	
	SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural	
	Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC	Cat. 1
	332-30-151? YES = Category I $NO = go to SC 1.2$	Cat. 1
	SC 1.2 Is the wetland at least 1 acre in size and meets at least two of the following conditions?	
	$YES = Category I \qquad NO = Category II$	Cat. I
	The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has	3444
	less than 10% cover of non-native plant species. If the non-native Spartina spp, are only species	Cat. II
	that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/I). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh	
	with native species would be a Category 1. Do not, however, exclude the area of Spartina in	
	determining the size threshold of 1 acre.	Dual
	At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland	Rating
	The wetland has at least 2 of the following features: tidal channels, depressions with open water,	I/II
	or contiguous freshwater wetlands.	
SC2	Natural Heritage Wetlands (see p. 87)	
502	Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as	
	either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or	
	Sensitive plant species.	
	SC 2.1 Is the wetland being rated in a Section/Township/Range that contains a natural heritage wetland? (This	
	question is used to screen out most sites before you need to contact WNHP/DNR.)	
	S/T/R information from Appendix D or accessed from WNHP/DNR web site	
	YES Contact WNHP/DNR (see p. 79) and go to SC 2.2 NO \underline{X}	
	SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as a site with state threatened	
	or endangered plant species?	Cat I
	YES = Category 1 NO \underline{X} not a Heritage Wetland	
SC3	Bogs (see p. 87)	
	Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? Use	
	the key below to identify if the wetland is a bog. If you answer yes you will still need to rate the	
	wetland based on its function.	
	1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that	
	compose 16 inches or more of the first 32 inches of soil profile? (See Appendix B for a field key to identify organic soils)? YES = go to question 3 NO = go to question 2	
	2. Does the wetland have organic soils, either peats or mucks that are less than 16 inches deep over	
	bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or	
	pond? YES = go to question 3 NO = is not a bog for purpose of rating	
	3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present,	
	consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more	
	than 30% of the total shrub and herbaceous cover consists of species in Table 3)?	
	YES = Is a bog for purpose of rating NO = go to question 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" deep. If the pH is	
	less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog.	
	4. Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western	
	hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine. WITH any of	
	the species (or combination of species) on the bog species plant list in Table 3 as a significant	
	component of the ground cover (> 30% coverage of the total shrub/herbaceous cover)?	Cat. I
	$\mathbf{YES} = \mathbf{Category} \ \mathbf{I} \qquad \qquad \mathbf{NO} = \mathbf{Is} \ \mathbf{not} \ \mathbf{a} \ \mathbf{bog} \ \mathbf{for} \ \mathbf{purpose} \ \mathbf{of} \ \mathbf{rating}$	

SC4	Forested Wetlands (see p. 90)	
	Does the wetland have at least 1 acre of forest that meet one of these criteria for the Department of Fish	
	and Wildlife's forests as priority habitats? If you answer yes you will still need to rate the wetland	
	based on its function.	
	Old-growth forests: (west of Cascade Crest) Stands of at least two three species forming a	
	multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare)	
	that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm or	
	more).	
	NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees	
	in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW	
	criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter.	
	Mature forests: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old	
	OR have an average diameters (dbh) exceeding 21 inches (53 cm); 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.	Cat. I
	YES = Category I NO = \underline{X} not a forested wetland with special characteristics	
SC5	Wetlands in Coastal Lagoons (see p. 91)	
	Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?	
	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 surface water that is saline or brackish (> 0.5)	
	ppt) during most of the year in at least a portion of the lagoon (needs to be measured near the	
	bottom.)	
	YES = Go to SC 5.1 NO \underline{X} not a wetland in a coastal lagoon	
	SC 5.1 Does the wetland meet all of the following three conditions?	
	The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing) and has	
	less than 20% cover of invasive plant species (see list of invasive species on p. 74).	
	At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed	
	or un-mowed grassland.	Cat. I
	The wetland is larger than 1/10 acre (4350 square ft.)	
	$\mathbf{YES} = \mathbf{Category} \ \mathbf{I} \qquad \qquad \mathbf{NO} \ = \mathbf{Category} \ \mathbf{II}$	Cat. II
SC6	Interdunal Wetlands (see p. 93)	
	Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or	
	WBUO)?	
	YES = Go to SC 6.1 NO \underline{X} not an interdunal wetland for rating	
	If you answer yes you will still need to rate the wetland based on its functions.	
	In practical terms that means the following geographic areas:	
	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 	
	SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is one acre or larger?	
	YES = Category II $\mathbf{NO} = \mathbf{go}$ to SC 6.2	Cat. II
	SC 6.2 Is the wetland between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre?	Cat. II
	YES = Category III	Cat. III
	Category of wetland based on Special Characteristics	
u	Choose the "highest" rating if wetland falls into several categories, and record on p. 1.	
	If you answered NO for all types enter "Not Applicable" on p. 1	

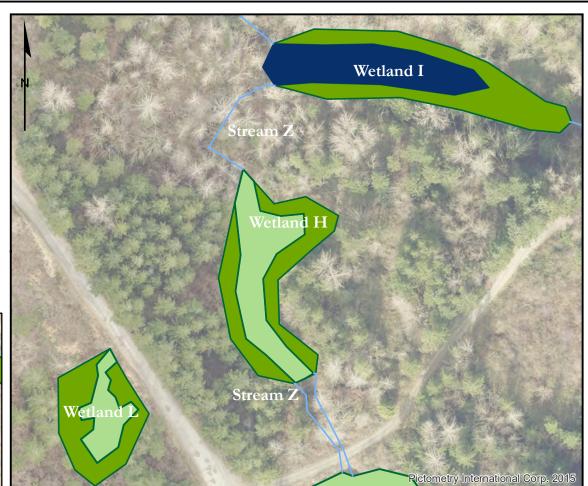
Attachment H – Wetland Rating Maps

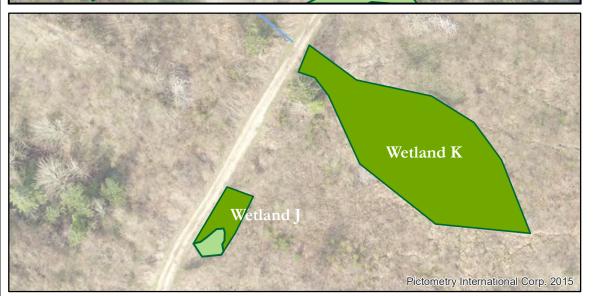
RAVENSDALE - 2004 WETLAND RATING MAPS



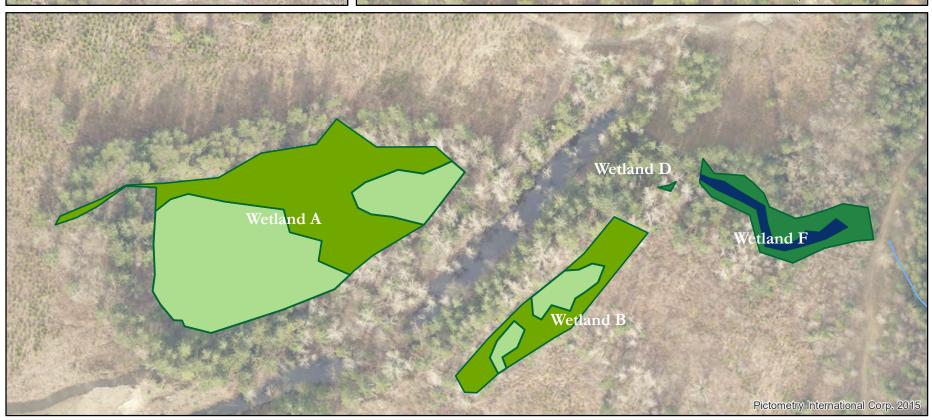










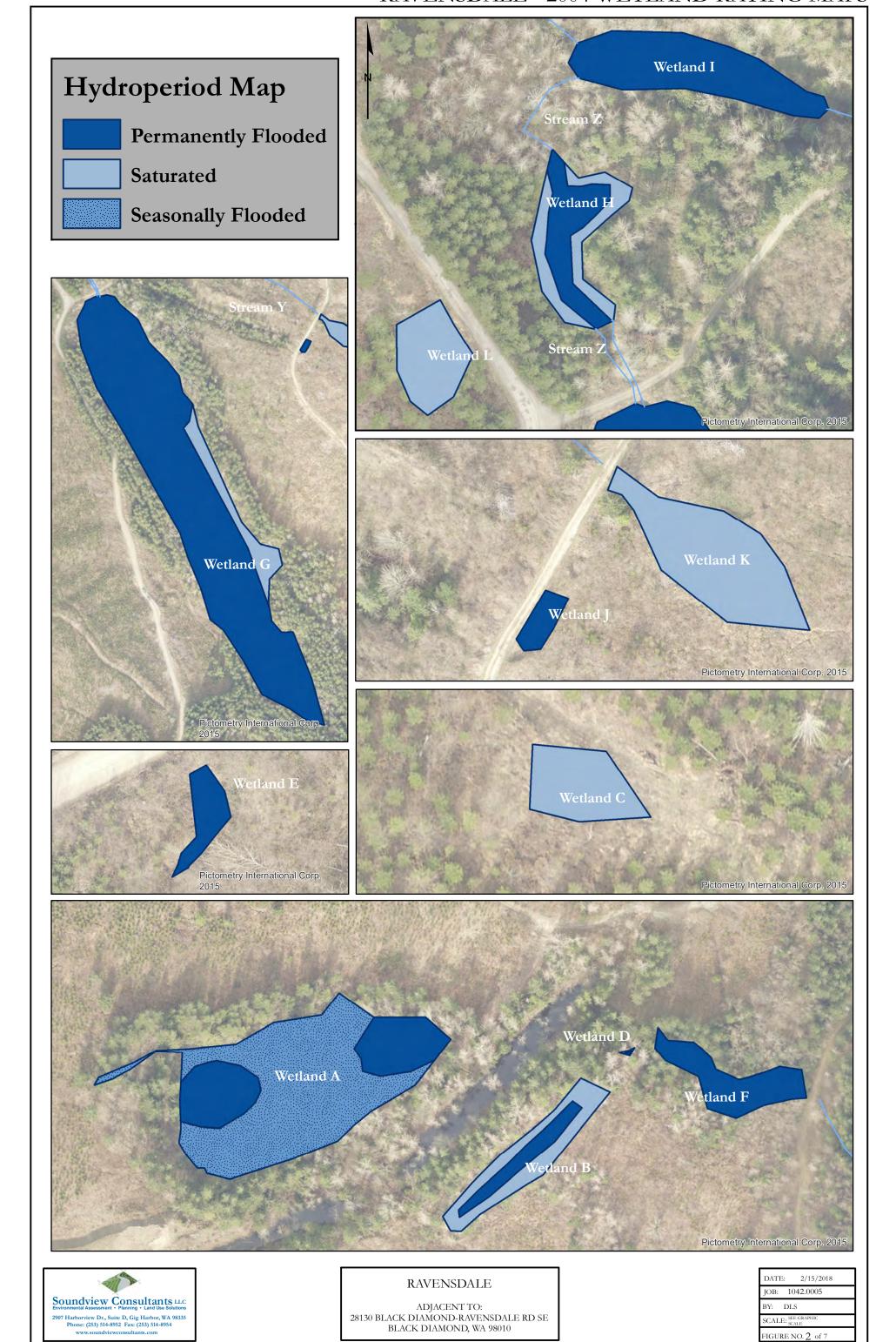


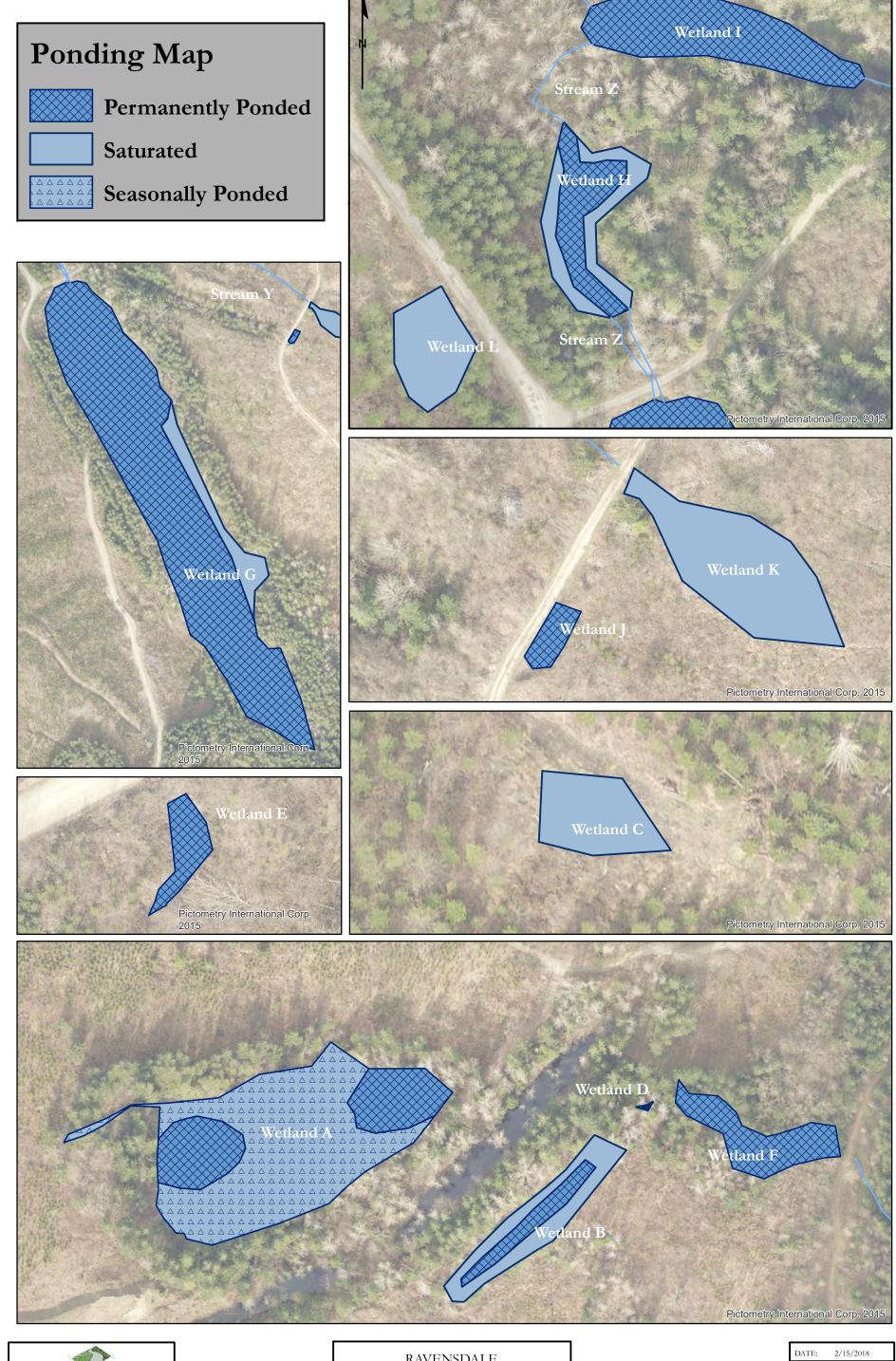


RAVENSDALE

DATE: 2/15/2018
JOB: 1042.0005
BY: DLS
SCALE:
FIGURE NO. 1 of 7

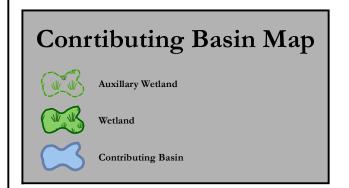
RAVENSDALE - 2004 WETLAND RATING MAPS



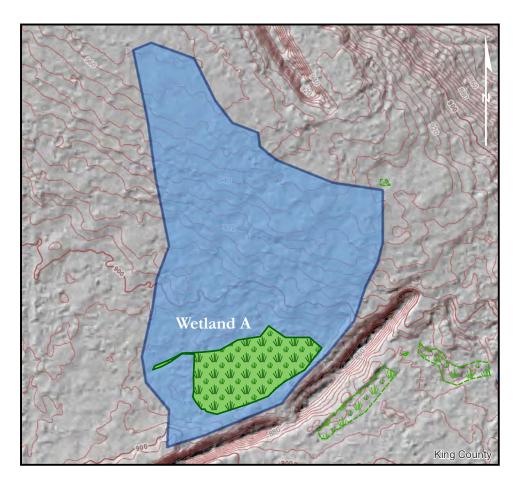


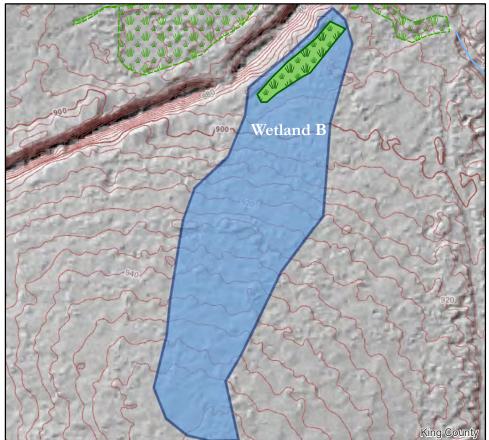


DATE: 2/15/2018	
JOB: 1042.0005	
BY: DLS	
SCALE: SEE GRAPHIC SCALE	
FIGURE NO. 3 of 7	



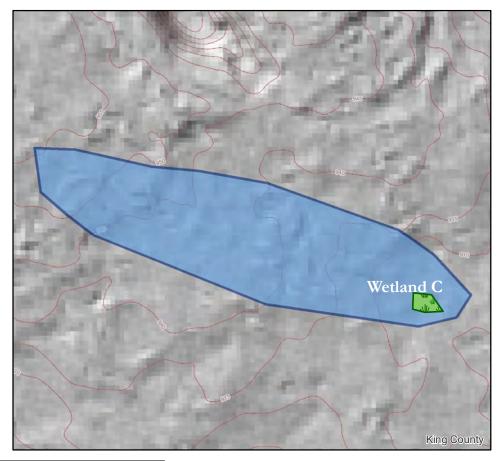
D.4.0		
D.4.3		
	Area of Contributing Basin (SF)	996027
	Area of Wetland A (SF)	114917
	Percent of Wetland A within Contributing	
	Basin	11.54%





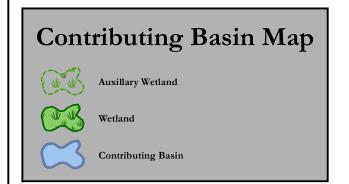
D.4.0		
D.4.3		
	Area of Contributing Basin (SF)	520660
	Area of Wetland B (SF)	25908
	Percent of Wetland B within Contributing	
	Basin	4.98%

D.4.0		
D.4.3		
	Area of Contributing Basin (SF)	70539
	Area of Wetland C (SF)	762
	Percent of Wetland C within Contributing	
	Basin	1.08%

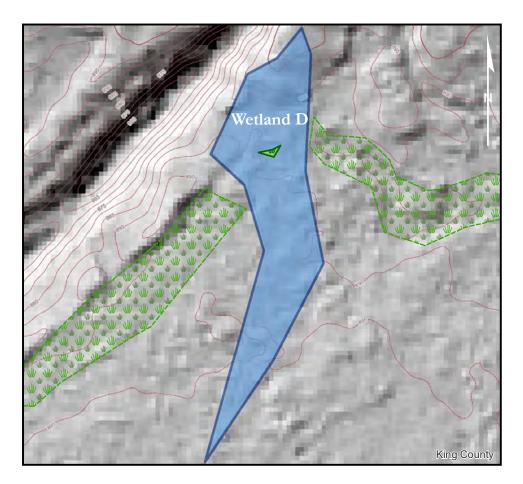


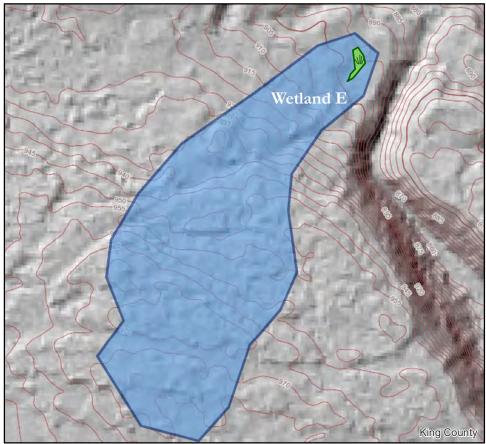


DATE: 2/19/2018
JOB: 1042.0005
BY: DLS
SCALE: SEE GRAPHIC SCALE
FIGURE NO. 4 of 7



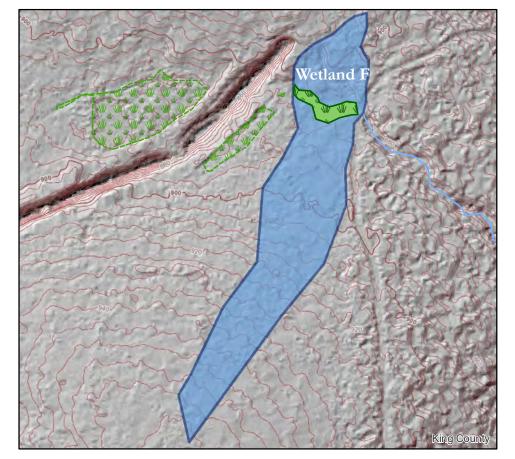
D.4.0		
D.4.3		
	Area of Contributing Basin (SF)	41170
	Area of Wetland D (SF)	169
	Percent of Wetland D within Contributing	
	Basin	0.41%





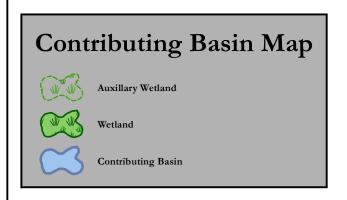
D.4.0		
D.4.3		
	Area of Contributing Basin (SF)	234324
	Area of Wetland E (SF)	1067
	Percent of Wetland E within Contributing	
	Basin	0.46%

D.4.0		
D.4.3		
	Area of Contributing Basin (SF)	534609
	Area of Wetland F (SF)	19096
	Percent of Wetland F within Contributing	
	Basin	3.57%

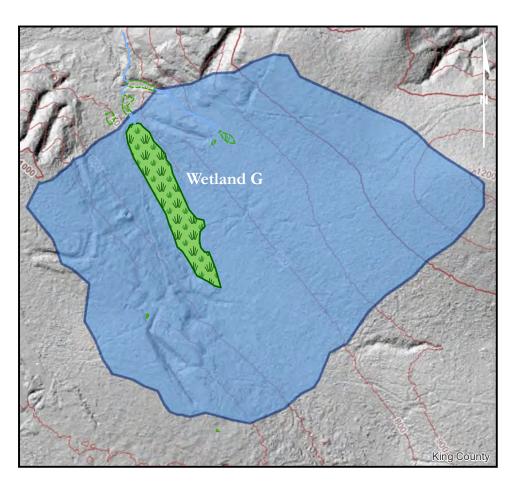


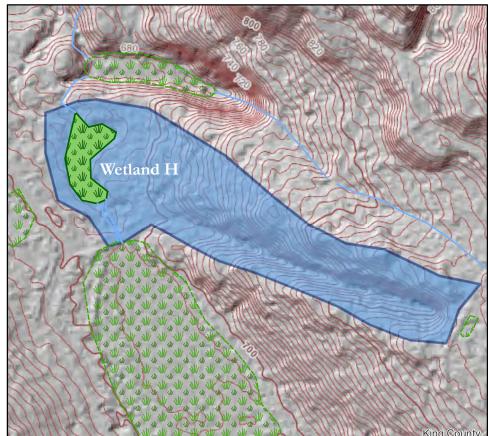


DATE: 2/19/2018
JOB: 1042.0005
BY: DLS
SCALE: SEE GRAPHIC SCALE
FIGURE NO. 5 of 7



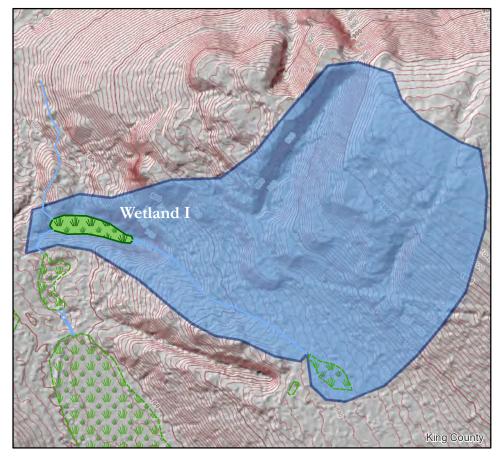
D.4.0		
D.4.3		
	Area of Contributing Basin (SF)	17408741
	Area of Wetland G (SF)	721138
	Percent of Wetland G within Contributing	
	Basin	4.14%





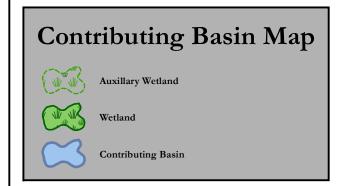
D.4.0		
D.4.3		
	Area of Contributing Basin (SF)	338680
	Area of Wetland H (SF)	21673
	Percent of Wetland H within Contributing	
	Basin	6.40%

D.4.0		
D.4.3		
	Area of Contributing Basin (SF)	1770991
	Area of Wetland I (SF)	26515
	Percent of Wetland I within Contributing	
	Basin	1.50%

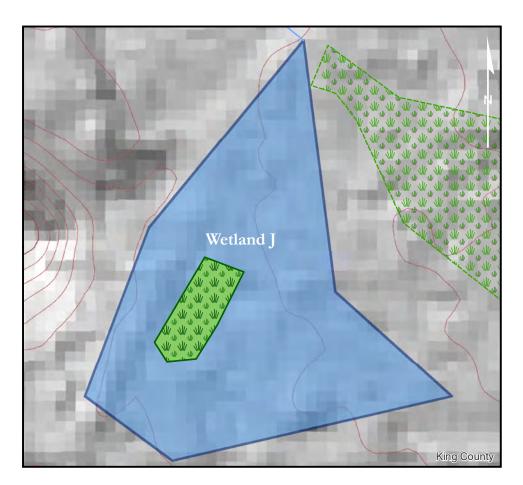


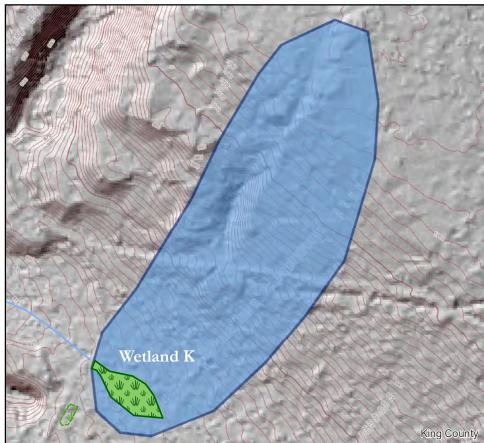


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BY: DLS	
SCALE: SEE GRAPHIC SCALE	
FIGURE NO. 6 of	7



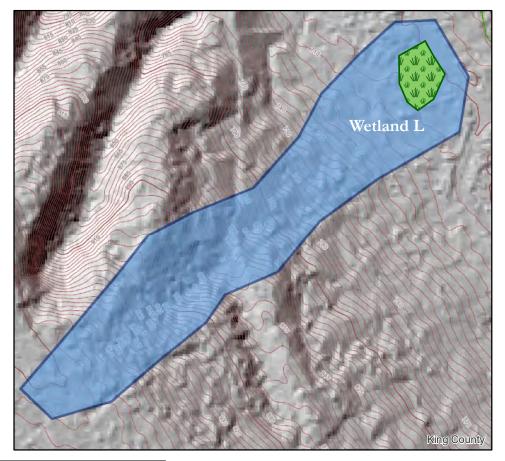
D.4.0		
D.4.3		
	Area of Contributing Basin (SF)	25312
	Area of Wetland J (SF)	1660
	Percent of Wetland J within Contributing	
	Basin	6.56%





D.4.0		
D.4.3		
	Area of Contributing Basin (SF)	527810
	Area of Wetland K (SF)	14732
	Percent of Wetland K within Contributing	
	Basin	2.79%

D.4.0		
D.4.3		
	Area of Contributing Basin (SF)	301719
	Area of Wetland L (SF)	13030
	Percent of Wetland L within Contributing	
	Basin	4.32%





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SCALE: S	SEE GRAPHIC SCALE
FIGURE	NO. 7 of 7

Attachment I – Qualifications

All field inspections, wetland and OHW delineations, habitat assessments, and supporting documentation, including this <u>Wetland, Aquatic Area, and Fish and Wildlife Habitat Assessment Technical Memorandum</u> prepared for <u>Ravensdale LLC</u>, were prepared by, or under the direction of, Jeremy Downs and Matt DeCaro of SVC. In addition, site inspections were performed by Richard Peel and Emily Swaim, and report preparation was completed by Matt DeCaro.

Jeremy Downs

Principal Scientist and Environmental Planner

Professional Experience: 30 years

Jeremy Downs is a Principal Scientist and Environmental Planner with professional training and extensive experience in land use, site planning and design, project coordination, permitting and management, marine and wetland ecology, habitat restoration, wetland, stream, and benthic delineations and assessments, stream assessments, underwater and terrestrial monitoring programs, and mitigation planning and design since 1987.

Jeremy earned a Bachelor's of Science degree in Biology from the University of California, Davis. In addition, he studied under the Environmental Risk and Recovery program at the Australian Institute of Marine Science. He also holds graduate-level professional certifications in various advanced wetland science and management programs from both Portland State University and San Francisco State University, and he has received professional training in Salmonid Biology from the University of California Extension.

Jeremy is a certified wetlands delineator under US Army Corps of Engineers guidelines. He has been formally trained in the use of the Washington State Wetland Rating System, Determination of Ordinary High Water Mark, Designing Compensatory Mitigation and Restoration Projects, and Reviewing Wetland Mitigation and Monitoring Plans from the US Army Corps of Engineers and Washington State Department of Ecology, and in conducting Biological Assessments from the Washington Department of Transportation. He is also a Kitsap County Qualified Wetland Specialist and Fisheries Biologist, and he holds similar qualifications from other jurisdictions.

Matt DeCaro

Environmental Planner/Project Manager

Professional Experience: 9 years

Matt DeCaro is an Environmental Scientist and Project Manager with a diverse background in stream ecology, water quality, wetland science, environmental due diligence, and site remediation. Matt currently provides permitting and regulatory compliance assistance for land use projects from their planning stages through review, approval, and construction. Matt performs wetland, stream, and shoreline delineations and fish & wildlife habitat assessments; provides land use planning assistance for residential, commercial, and industrial projects; conducts code and regulation analysis; prepares reports and aquatic permit applications for local, State, and Federal review; and performs restoration and mitigation design.

Matt earned a Bachelor of Science degree with a focus in Environmental Science from the Evergreen State College in Olympia, Washington, with additional graduate-level coursework and research in

aquatic restoration and salmonid ecology at Alaska Pacific University in Anchorage, Alaska. Matt has been formally trained in the use of the Washington State Wetland Rating System and Determination of Ordinary High Water Mark by the Washington State Department of Ecology, and he has attended USFWS survey protocol workshops for multiple threatened and endangered species. He is also a Pierce County Qualified Wetland Specialist and Wildlife Biologist, and a Senior Author of WSDOT Biological Assessments. Matt holds 40-hour HAZWOPER certification and has considerable experience managing Phase I Environmental Site Assessments, subsurface investigations, and contaminant remediation projects throughout the Pacific Northwest. His diverse experience also includes NEPA compliance for federal projects; noxious weed abatement; spotted owl surveys on federal and private lands; and salmonid spawning and migration surveys.

Richard Peel

Wetland Scientist

Professional Experience: 6 years

Richard Peel is a Wetland Scientist with diverse professional experience in wetland ecology, monitoring, and delineation throughout Washington and Oregon. Richard is Washington State trained in conducting wetland delineations, assessing wetland systems, mitigation planning and design, implementation of monitoring programs, mitigation monitoring and reporting. He also has extensive experience in an analytical laboratory using state-of-the-art equipment in bacteriological and chemical analysis of soil and water samples.

Richard is a graduate of The Evergreen State College, with dual degrees in Ecology and Economics. He has focused his academic career on ecology, disturbance ecology, chemistry, and the economic impacts of current environmental management. Richard has extensive training and field experience in wetland related disciplines, and has experience with wetland delineations both east and west of the Cascades. He has been trained by The Washington State Department of Transportation's (WSDOT) Wetland Ecology and Monitoring team in the use of the wetland delineation, mitigation, monitoring, and restoration techniques. In addition, he was directed by WSDOT's Wetland Protection and Preservation Policy to ensure wetlands are preserved and protected whenever possible. This direction ensures no net loss in the quantity or quality of wetlands in the future and minimization of impacts to wetlands in the present.

Richard is a certified Professional Wetland Scientist (#2858). He has been formally trained in the use of the Washington State Wetland Rating System, Shoreline Stabilization, Eelgrass Delineation, and several other critical area assessment and restoration projects from the Washington Department of Fish and Wildlife, and Washington State Department of Ecology. He is also a Pierce County Qualified Wetland Specialist, and he holds similar qualifications from other jurisdictions.

Emily Swaim

Wetland Scientist/Field Geologist Professional Experience: 4 years

Emily Swaim is a Wetland Scientist and Field Geologist with a background in conducting Phase I, II and III Environmental Site Assessments (ESAs), underground natural gas pipeline and overhead electrical transmission line project assessment and environmental inspections, construction oversight, stormwater compliance inspections, soil sampling, delineating and assessing wetland and aquatic systems, and stormwater, floodplain, and wetland permitting. Ms. Swaim's expertise focuses on

projects involving sensitive wetland and stream habitats where extensive team coordination and various regulatory challenges must be carefully and intelligently managed from project inception to completion.

Emily earned a Bachelor of Science degree in Geology from Illinois State University and Wetland Science and Management Professional Certification from the University of Washington, Seattle. She is also educated in Environmental Science from Iowa State University. Her education and experience has provided her with extensive knowledge on soils, wetland science, hydrogeology, sedimentology, environmental law, environmental geology, landscape ecology, and structural geology. Ms. Swaim has been formally trained in Hazardous Waste Operations and Emergency Response (HAZWOPER) and is Occupational Health and Safety Administration (OSHA) 30-hour Construction and 10-hour Construction certified. She is also a Pierce County Qualified Wetland Specialist and Wetland Professional In-Training (WPIT) through the Society of Wetland Scientists.

Dana Scott

Spatial Design Developer Professional Experience: 6 years

Dana Scott is a Geographic Information Systems Developer with a background in application development for web and mobile platforms, managing spatial data, GIS education, and project management. Dana currently provides spatial analysis and design support for residential, commercial and industrial land use planning and permitting. She develops delineation exhibits, creates site and mitigation plans, and prepares environmental assessment and mitigation reports.

Dana earned a Master of Science degree in Geospatial Technologies from the University of Washington. She has also received a Bachelor's degree in Environmental Science with a minor in Business Administration. Her educational focus has given her several years of experience in marine debris and sediment studies through the National Atmospheric and Oceanic Administration. Dana is also certified through the University of Washington as a GIS engineer and has received formal training through the Washington State Department of Ecology and Coastal Training Program in the use of the Washington State Wetland Rating System.