

**WETLAND DELINEATION AND FISH AND WILDLIFE
HABITAT ASSESSMENT REPORT**

**HARBOR HOMES LLC – 3601 SEATTLE HILL ROAD MILL
CREEK (HARMS ESTATE)**

JUNE 2015

WETLAND DELINEATION AND FISH AND WILDLIFE HABITAT ASSESSMENT REPORT

HARBOR HOMES LLC – 3601 SEATTLE HILL ROAD MILL CREEK (HARMS ESTATE)

JUNE 24, 2015

PROJECT LOCATION

3601 SEATTLE HILL ROAD
MILL CREEK, WASHINGTON 98012

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Executive Summary

Soundview Consultants LLC has been retained by Harbor Homes, LLC (Client) to complete a wetland delineation and fish and wildlife habitat assessment for the future development of an approximately 7.13-acre property that is composed of one tax parcel, but has two identifying tax parcel numbers (Snohomish County Tax Parcel Numbers 27050400201600 and 27050400201602). The subject property is located at 3601 Seattle Hill Road, Mill Creek, Washington 98012 and is situated in the Northwest ¼ of Section 04, Township 27 North, Range 05 East, W.M.

Soundview Consultants LLC investigated the subject property for wetlands, streams, potentially regulated fish and wildlife habitat, and/or priority species on September 17, 2014. The site investigation identified one (1) on-site wetland and two (2) off-site wetlands, whose buffers extend onto the subject property in the northeast portion of the subject property. The on-site wetland and wetland buffers are not likely regulated by the U.S. Army Corps of Engineers (USACE), but are still regulated by Washington State Department of Ecology (Ecology), and the City of Mill Creek.

In addition, Soundview Consultants LLC had addition coordination with the third-party reviewer, (ESA) regarding the connectivity of the wetlands within the vicinity of the project area and also the appropriate wetland rating system to use. As a result, the focus of this assessment has reverted back to the southernmost wetland unit as a standalone wetland unit, as was originally reported.

Wetland Name	Size (acres)	Category / Type ^A	Regulated Under Mill Creek Municipal Code Chapters 18.06	Regulated Under RCW 90.48	Regulated Under Section 404 of the Clean Water Act ^B
Wetland A	0.11	III	Yes	Yes	Unlikely

^A. Current Department of Ecology and City of Mill Creek wetland rating and definitions.

^B. Preliminary jurisdictional status of wetlands to be regulated under Section 404 of the CWA, subject to review by the City of Mill Creek and USACE.

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Chapter 1. Introduction

Soundview Consultants LLC has been retained by Harbor Homes, LLC (Client) to complete a wetland delineation and fish and wildlife habitat assessment for the future development of an approximately 7.13-acre property that is composed of one tax parcel, but has two identifying tax parcel numbers (Snohomish County Tax Parcel Numbers 27050400201600 and 27050400201602). The subject property is located at 3601 Seattle Hill Road, Mill Creek, Washington 98012 and is situated in the Northwest $\frac{1}{4}$ of Section 04, Township 27 North, Range 05 East, W.M.

The subject property is bounded on the north, west, and south sides by single-family residential communities and on the east by one single family residence containing pasture (Figure 2). The project proposes to develop most of an approximately 7.13-acre site with single-family residential structures; the buildable area on-site totals approximately 6.27 acres. The purpose of the project is to provide single-family residences within the City of Mill Creek on a property designated as low-density residential (City of Mill Creek, 2012). The proposed project includes twenty-eight (28) residential structures with an extension of 149th Place Southeast as an access road; driveways, parking areas, stormwater drainage and open space, and associated utilities and infrastructure. Of the 7.13-acres, there is an estimated 0.86-acre area of wetland and associated wetland buffer areas and an estimated 6.27 acres in development area.

In addition, Soundview Consultants LLC had addition coordination with the third-party reviewer, (ESA) regarding the connectivity of the wetlands within the vicinity of the project area and also the appropriate wetland rating system to use. As a result, the focus of this assessment has reverted back to the southernmost wetland unit as a standalone wetland unit, as was originally reported.

The City of Mill Creek 2012 Comprehensive Plan identifies the subject property land use ordinance as low-density residential; Snohomish County On-line Property Interactive Map identifies the property category as land and improvements. For the purposes of this assessment and to facilitate future planning by the Client it will be assumed that the future use of the subject property is high impact in nature per Mill Creek Municipal Code (MCMC 18.06.210). Based on this assumption, recommendations will be made to determine development limitations of the subject property as they relate to critical areas and, following this assessment, develop a proposed management plan that satisfies the criteria outlined in the MCMC Title 18. This report provides conclusions and recommendations regarding:

- Site description, project description, and area of assessment;
- Background research and identification of potentially regulated critical areas and habitats within the vicinity of the proposed project;
- Identification, delineation, and assessment of potentially regulated wetlands and waterbodies;
- Identification and assessment of regulated fish and wildlife habitat;
- Standard buffer recommendations, building setbacks, and development limitations;
- Existing site-map which details identified critical areas and standard buffers, and
- Supplemental information necessary for local regulatory review.

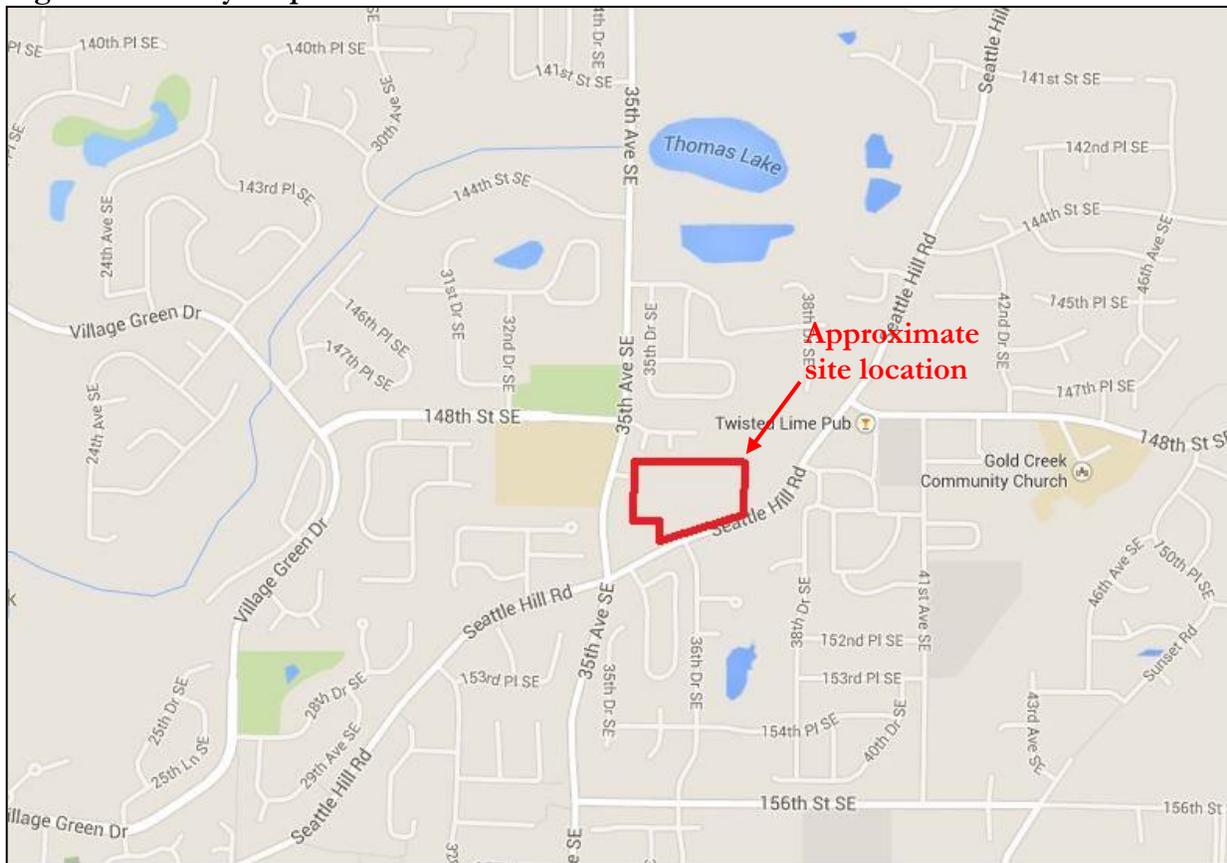
Chapter 2. Property Description

2.1 Project Location

The subject property is located within the City of Mill Creek near the intersection of Seattle Hill Road and 35th Avenue Southeast, approximately 1.5 miles east of WA State Route 527 (Bothell-Everett Highway). The subject property is located at 3601 Seattle Hill Road, Mill Creek, Washington 98012 in the Northwest ¼ of Section 04, Township 27 North, Range 05 East, W.M.

Access to the subject property can be achieved by taking Exit 26, on Interstate 405, and heading north on WA-527 (Bothell-Everett Highway). After approximately 3 miles turn right (east) onto Seattle Hill Road. Follow Seattle Hill Road for approximately 1.5 miles. The subject property is on the left (north) side of Seattle Hill Road.

Figure 1. Vicinity Map



Source: Google Maps

2.2 Project Description

In compliance with requirements listed under MCMC 18.06, this section discusses the actions proposed for the subject property. No development dates have been established as of yet, though the proposed project intends to follow a typical Pacific Northwest construction schedule and conduct site grading in the dry season and carry out interior work in wetter seasons.

The project proposes the construction of 28 single-family residential structures with associated infrastructure on an approximately 7.13-acre site. In addition, the project proposes associated driveways, parking areas, stormwater drainage and open space, and associated utilities. Two existing residential structures and associated infrastructure are located on-site. The wetlands and associated buffers located on and off of the subject property have not been developed. Impacts to wetland buffers are being minimized through careful planning efforts and buffer averaging. Potential indirect impacts to wetlands are further being avoided by the use of low impact development methods and stormwater management infrastructure.

To provide access to the proposed single-family residences, the internal roadway will be constructed with ingress/egress along 35th Avenue Southeast. Two of the proposed lots will encroach into the easternmost area of the buffer associated with Wetland A. To compensate for buffer impacts, buffer averaging will be proposed per MCMC 18.06.930. This action will likely not reduce overall buffer function and will maintain the same net buffer area. No impacts to Wetlands A, B, C, or the buffer associated with Wetlands B and C are proposed. In addition, some clean roof water will be dispersed into the buffers associated with Wetlands B and C; to ensure hydrology to the wetlands is maintained at predevelopment levels.

Aside from the actions listed above, no development or construction activities will occur inside the wetlands or buffer area. The project is designed to avoid critical areas to the greatest extent possible. All work shall be consistent with the MCMC and best management practices (BMPs) as defined in MCMC 18.06.210 and 18.06.1030.

Chapter 3. Methods

This chapter summarizes the methods used to comply with Federal, State, and local regulations regarding on-site critical areas. Please see Appendix A for further details of methods used in this report.

The subject property was assessed by a qualified wetland scientist on September 17, 2014. Wetlands and other potentially regulated fish and wildlife habitat within the site or within approximately 300 feet of the area were delineated and/or assessed during the summer of 2014. Potentially regulated areas were inspected using multiple assessment methods with special emphasis given to the wetland and potential critical areas nearest to the site.

Publicly available background data was queried for documented wetlands, streams, and/or fish and wildlife habitat on or near the site, including the U.S. Geographic Survey (USGS) topographic map, the Natural Resources Conservation Service (NRCS) Soil Survey, National Wetlands Inventory (NWI), US Fish and Wildlife Service (USFWS), Snohomish County GIS data, local precipitation data (NOAA), and various orthophotographic resources. Graphics and maps detailing background data such as site topography, soils, vegetative buffers, and critical areas inventories are provided in Appendix B.

The subject property was walked and off-site areas within 315 feet were visually inspected, where possible, to identify potential wetland areas. Off-site wetland areas were observed from the subject property to estimate wetland sizes and categories and to approximate wetland boundaries in order to establish distance between wetland edges and the subject property. Observations of off-site wetland areas were used to conduct ratings to establish buffer widths, as some buffers extend onto the subject property. On-site wetland boundaries were determined using the routine approach described in the U.S. Army Corps of Engineers' (USACE) Wetland Delineation Manual (USACE, 1987) and 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). All three wetlands (Wetlands A, B, and C) were assessed using both the hydrogeomorphic (Brinson, 1993) and Cowardin classification systems (Cowardin, 1979). Following assessment, the wetlands were rated and categorized using the *Washington State Wetlands Rating System for Western Washington – Revised* (Hruby, 2004) and guidelines established in the MCMC 18.06.910. In addition, on-site and off-site wetland ratings were reviewed and influenced by the City of Mill Creek's third party reviewer, ESA. Per coordination with ESA regarding the connectivity of the wetlands within the vicinity of the project area and also the appropriate wetland rating system to use, the focus of this assessment has reverted back to the southernmost wetland unit as a standalone wetland unit, as was originally reported.

To mark the boundary between wetlands and uplands on-site, orange surveyor's flagging was alpha-numerically labeled and tied to vegetation along the wetland boundary. To mark the points where data was collected, pink surveyor's flagging was alpha-numerically labeled and tied at each sampling location. The location of each wetland boundary flag and data plot was professionally surveyed using standard land surveying techniques. The locations of on-site wetland areas are described in Section 4.3 of this report, and shown in the site plans (Appendix C).

Chapter 4. Existing Conditions

4.1 Landscape Setting

The subject property is located within the City of Mill Creek and is zoned as a low-density housing area per Mill Creek Comprehensive Plan, 2012. The surrounding area of the subject property is predominately low-density, urban development consisting of single-family residences and commercial facilities. The subject property is currently undeveloped land and contains two residential structures. Portions of the property and surrounding areas have been used as pasture and other agricultural purposes within the past 25 years.

The subject property is located within Washington Water Resource Inventory Area (WRIA) 8 Cedar/Sammamish. Water on-site does not have surface flow discharge through any man-made or natural drainages. The site is located approximately two miles east of North Creek, which is a tributary of the Sammamish River, and eventually drains to Lake Washington. One wetland (Wetland A) currently exists on site and is located in the west-central portion of the property. Two off-site wetlands (Wetlands B and C) are located off-site to the northeast and have overlapping wetland buffers that extend onto the subject property.

Figure 2. Aerial Photo of the Subject Property



Source: Snohomish County Online Property Information

4.2 Topography

The current Snohomish County site topography map, generated from Snohomish County Interactive GIS Mapping, shows the property has a general slight slope downward from west to east (Appendix B).

4.3 Wetlands Inventories

The U.S. Fish and Wildlife Service's National Wetlands Inventory (NWI) map does not identify any wetlands on the subject property (Appendix B). One freshwater wetland is identified off-site to the northwest of the subject property.

4.4 Soils

The Natural Resources Conservation Service (NRCS) Web Soil Survey identified Alderwood gravelly sandy loam, 2 to 8 percent slopes as being present on the subject property (Appendix B). No other soil series were identified by NRCS.

Alderwood gravelly sandy loam, 2 to 8 percent slopes

According to the NRCS soil survey, Alderwood gravelly sandy loam is described as a moderately well-drained soil formed on glacial till. In a typical pedon of the Alderwood series is: 0.0 inch to 7.0 inches is a very dark grayish brown (10YR 3/2) gravelly sandy loam; 7.0 to 21.0 inches is a dark yellowish brown (10YR 4/4) very gravelly sandy loam; 21.0 to 30.0 inches is a dark brown (10YR 4/3) very gravelly sandy loam; 30 to 35 inches contains two matrix colors, an olive brown (2.5Y 4/4) and light yellowish brown (2.5Y 4/2) very gravelly sandy loam; 35 to 43 inches is a dark grayish brown (2.5Y 4/2) duripan; and 43 to 60 inches is a gray is brown (2.5Y 5/2) compact glacial till.

Alderwood gravelly sandy loam, 2 to 8 percent slopes is considered non-hydric within this region. The NRCS Soil Survey Map is located in Appendix B.

4.5 Vegetation

The subject property is predominately undeveloped land containing overgrown pasture and scrub shrub areas. The west central and northeast portions of the property contain forested areas. The existing vegetation consists of Douglas fir, Pacific willow, hardhack, Pacific crabapple, and Himalayan blackberry. Groundcover within these areas consists of creeping buttercup, sword fern, and European bittersweet.

4.6 Priority Habitats and Species

Washington Department of Fish and Wildlife's (WDFW) Priority Habitats and Species (PHS) maps do not identify any priority habitat or species on the subject property or within 300 feet. WDFW interactive data maps (SalmonScape) also do not identify any salmonids or fish bearing streams on the subject property of within 300 feet (Appendix B).

Chapter 5. Results

5.1 Wetlands

The site investigation identified a total of (1) one on-site, and (2) two off-site wetlands located near the northeast corner of the subject property. The off-site wetlands have overlapping buffers that extend onto the subject property. The wetlands identified contained indicators of wetland hydrology, hydric soils, and a predominance of hydrophytic vegetation which satisfied the criteria set forth in Chapter 3. All wetlands are located within the local jurisdiction of City of Mill Creek. Wetland A is a Palustrine Scrub-Shrub, Seasonally Flooded wetland. Off-site Wetlands B and C are Palustrine, Scrub-Shrub, Saturated wetlands and rated as Category IV and Category III, wetlands respectively.

Table 1. On-Site Wetland Summary.

Wetland	Predominant Wetland Classification/Rating				Wetland Size		Buffer Width (feet) ^E
	Cowardin ^A	HGM ^B	Ecology ^C	Mill Creek ^D	square feet	Acres	
A	PSSC	Depressional	III	III	4,712	0.11	100

- A. Cowardin et al. (1979) or National Wetland Inventory (NWI) Class based on vegetation: PEM = Palustrine Emergent; PSS = Palustrine Scrub-Shrub; PFO = Palustrine Forested; Modifiers (-C, -E, -H, -x, et cetera) = Water Regime or Special Situations
 B. Brinson, M. M. (1993).
 C. Ecology rating according to Washington State Wetland Rating System for Western Washington – Revised Hruby (2004).
 D. MCMC 18.06.910 (verified with Ecology 2006 rating forms).
 E. MCMC 18.06.930.

Soils

The soils identified within each data plot appeared similar to the mapped NRCS soil units in most areas. All NRCS mapped units for this site are considered primarily non-hydric except for minor hydric inclusions in wet areas. NRCS lists one soil series (Alderwood gravelly sandy loam) which was identified on-site (see Section 4.4) as having gravelly sandy loam with some gravel or cobbles. The NRCS Soils map for the site is located in Appendix B.

Vegetation

Dominant vegetation in the wetland was identified as hardhack, Pacific crabapple, creeping buttercup, and climbing nightshade. Herbaceous vegetation was generally lacking within the on-site wetland due to extensive shading of shrub species. Wetland delineation data sheets are located in Appendix D.

Hydrology

Hydrologic support for Wetland A is provided by direct precipitation and surface sheet flow. Indicators of wetland hydrology observed within Wetland A included algal crust and water stained leaves. Wetlands B and C are located off-site and were not delineated. Wetland data sheets are located in Appendix D.

Wetland A

Wetland A is characterized as a Scrub-Shrub, Seasonally-Flooded wetland, approximately 4,712 square feet (0.11 acre) in size, located within the western portion of the subject property. Using the current Washington State Department of Ecology (WSDOE) rating forms (Hruby, 2004),

this wetland has been determined to be a Category III depressional wetland. According to MCMC 18.06.930, the recommended buffer for Wetland A is 100 feet for High Impact Land Use or 50 feet for Low Impact Land Use.

Table 2. Wetland A Summary.

WETLAND A – INFORMATION SUMMARY		
Location:	West-central portion of the subject property	
	Local Jurisdiction	City of Mill Creek
	WRIA	8
	Ecology Rating^A	III
	Mill Creek Rating^B	III
	Mill Creek Buffer Width^C	100 feet- High Impact
	Estimated Wetland Size	4,712 square feet
	Cowardin Classification^D	PSSC
	HGM Classification^E	Depressional
	Wetland Data Sheet(s)	DP-02
	Upland Data Sheet (s)	DP-01
Boundary Flag color	Orange	
Dominant Vegetation	Pacific crabapple over hardhack and creeping buttercup.	
Soils	Identified onsite as gravelly sandy loam and mapped as Alderwood gravelly sandy loam with 2 to 8 percent slopes.	
Hydrology	Algal mats and water stained leaves present. Hydrology is provided by direct precipitation surface water drainage from surrounding urban development, and sheet flow.	
Rationale for Delineation	Upland areas were determined by topographic rise adjacent to depressional area characterized with algal mats and water stained leaves.	
Rationale for Local Rating	Local rating is based upon Ecology’s current rating system and the City of Mill Creek’s Title 18.06.910.	
Wetland Functions Summary		
Water Quality	Due to vegetation and very limited storage capacity, there is some minor potential for water quality improvement, but limited opportunity exists as surrounding areas are predominantly developed.	
Hydrologic	Due to its depressional characteristics, Wetland A may occasionally retain some surface water but it is more likely seasonally saturated from direct precipitation, stormwater runoff, and sheet flow.	
Habitat	Wildlife habitat functions provided by the wetland may include small mammal forage and cover, along with small bird forage and nesting and amphibian breeding area.	
Buffer Condition	The buffer surrounding Wetland A is developed to the west and south with single family residential structures and associated infrastructure. The buffer to the north and east is dominated by successional growth that includes Pacific crabapple, hardhack, creeping buttercup Douglas fir and sword fern.	
Notes:		
A. Ecology rating according to Washington State wetland rating system for Western Washington – Revised Hruby (2004).		
B. Mill Creek Municipal Code (18.06.910).		
C. Wetland buffer width according to Mill Creek Municipal Code (18.06.930).		
D. Cowardin et al. (1979) or National Wetland Inventory (NWI) Class based on vegetation: PEM = Palustrine Emergent; PSS = Palustrine Scrub-Shrub; PFO = Palustrine Forested; Modifiers (-C, -E, -H, -x, et cetera) = Water Regime or Special Situations		
E. Brinson, M. M. (1993).		

5.2 Wetland Functions

Wetland A may provide water quality functions and stormwater retention and infiltration functions along with water quality and enhancement. However, these functions are limited due to the small size of the wetland and lack of surface connectivity to natural and/or man-made conveyances. Habitat functions are available for small mammals, birds, and amphibians.

5.3 Wetland Buffers

Wetland A is a Category III wetland (MCMC 18.06.910). According to wetland buffer requirements under MCMC 18.06.930, Category III wetlands require a 100-foot buffer when associated with high impact land use. In addition, buildings and other structures require a 10-foot buffer setback; the residential development will require minor buffer intrusion resulting in buffer averaging per MCMC 18.06.930.

Wetland A is mostly undeveloped with single family residential structures located off-site, directly west, and within the 100-foot buffer. There is native vegetation within the buffer, but it contains a low level of species diversity. Recommended development activities allowable under MCMC are assessed in Chapter 6. A small portion (approximately 5,078 square feet) of Wetlands B and C's buffer extends on-site in the northeast corner of the subject property. Wetland B is a Category IV wetland and will require a 50 foot buffer; Wetland C is a Category III wetland and will require a 100-foot buffer associated with high-intensity use. Buildings and other structures require a 10-foot buffer setback; no project activities will require intrusion into the buffer associated with Wetland B.

5.4 Fish and Wildlife Habitat

Aside from Wetland A, the site investigation did not identify any aquatic features and/or wildlife habitat (e.g. streams, man-made ditches) on the subject property.

Chapter 6. Conclusions and Recommendations

The proposed project is located in the City of Mill Creek, Washington. The results of the September 17, 2014 site investigation identified one on-site wetland (Wetland A) and two off-site wetlands (Wetlands B and C). Wetland A is a depressional wetland that is undeveloped and comprises a total of 4,712 square feet (0.11 acre). The associated buffer area encumbers approximately ten percent of the subject site. Buffer areas associated with off-site Wetlands B and C extend onto the northeastern corner of the property and encumber less than five percent of the site. Wetland A appears to be isolated with no discharge or drainage channels exiting or entering the wetland. Wetland A likely does not have a significant nexus with waters of the United States due to its isolation; however, Wetland A is regulated by the City of Mill Creek.

MCMC has adopted a similar rating system to the WDOE wetland rating system (MCMC 18.06.910). A Category III wetland, such as Wetland A, provides moderate level of function and are typically more disturbed, smaller, and/or more isolated in the landscape than Category I and II wetlands. A Category III wetland scores a 30 to 50 on the Western Washington Wetland Rating System form (MCMC 18.06.910).

6.1 Avoidance and Minimization Measures

Direct impacts to both on-site and off-site wetlands are being avoided and minimized through careful project design to entirely avoid wetland areas. Full site development would include a larger portion of the site that would have impacted considerably more permanent wetland areas that are now preserved. Potential indirect impacts to wetlands are further being avoided by protection of existing wetland buffers to the greatest extent possible. The proposed project avoids and minimizes wetland impacts to the greatest extent possible; however, to satisfy project goals the proposed project will require minor impacts to the outer portions of buffers associated with Wetland A. As non-compensatory mitigation, the project proposes to average the existing buffer for each wetland to ensure no-net loss of functions.

A pre-construction meeting will be held between the Client, general contractor, and the Wetland Scientist to discuss the project and limitations specifically related to protection of critical areas and implementation of mitigation actions. Following the pre-construction meeting, temporary erosion and sediment control (TESC) measures will be implemented consisting of high-visibility fencing (HVF) installed around the modified wetland buffers, silt fencing between the graded areas and buffers when appropriate, use of plastic sheeting on stockpiled materials, and seeding of disturbed soils should be installed and actively managed for the duration of the project. Particular care will be necessary along the wetland buffer in the western and northeast portion of the subject property to ensure the area is not significantly disturbed.

A concrete wash water collection basin should also be installed outside the wetland buffer prior to commencement of construction activities requiring additional concrete work. All equipment staging and materials stockpiles should be kept out of the buffer, and the area will need to be kept free of spills and/or hazardous materials. All material and road surfacing should be sourced from upland areas on-site or from approved suppliers, and will need to be free of pollutants and hazardous materials. Construction materials along with all construction waste and debris should be effectively managed and stockpiled on paved surfaces and kept free of the wetland and buffer areas. Following

completion of the plat, the entire site should be cleaned and detail graded using hand tools wherever necessary, and TESC measures will need to be removed.

6.2 Buffer Averaging Efforts

Due to intrusion into the buffers associated with Wetland A, a portion of the eastern area of Wetland A's buffer will be reduced. As a result, northern and southern portions of Wetland A's buffer will be extended through buffer averaging. With careful planning, buffer width modification using the buffer averaging standards set forth in MCMC 18.06.930.C will be applied to this project. The project proposes a larger buffer addition area for Wetlands A than the area of buffer to be reduced to ensure no net loss of total buffer area. As Wetlands A contains variations in sensitivity, the wetland functions and values will not be reduced as a result of project impacts. No section of the buffer for Wetlands A will be less than 50 percent of the standard buffer width and the portions of buffers that are proposed to be reduced are less than 25 percent of the total buffer lengths.

Careful planning and targeted implementation of the buffer averaging actions, will help ensure that no net loss will occur within the critical areas identified in this assessment.

Chapter 7. References

- Brinson, M. M., 1993. *A hydrogeomorphic classification for wetlands*, Technical Report WRP-DE-4. U.S. Army Engineer Waterways Experiment Station. Vicksburg, Mississippi.
- City of Mill Creek, 2012. City of Mill Creek Comprehensive Plan.
- City of Mill Creek Municipal Code, 2014. Title 18, Environment.
- Cooke, S.S, 1997. *Wetland Plants of Western Washington*. Seattle Audubon Society. Seattle, Washington
- Cowardin, L.M. V. Carter, F. Golet, and E.T. LaRoe, 1979. *Classification of Wetlands and Deepwater Habitats of the United States*. U.S. Fish and Wildlife Service. Washington D.C.
- Debose, A. and M Klungland, 1983. *Soil Survey of Snohomish County Area, Washington*. U.S. Department of Agriculture, Soil Conservation Service, in cooperation with Washington State Department of Natural Resources and Washington State University, Agricultural Experiment Station.
- Environmental Laboratory. 1987. *Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1*, US Army Engineer Waterways Experiment Station, Vicksburg, Mississippi.
- Hitchcock, C.L. and A. Cronquist, 1973. *Flora of the Pacific Northwest*. University of Washington Press. Seattle, Washington.
- Hruby, T., 2004. *Washington State Wetland Rating System for Western Washington – Revised*. Washington State Department of Ecology Publication # 04-06-15. Olympia, Washington.
- Natural Resources Conservation Service. 1995. *Hydric Soils of Washington*. U.S. Department of Agriculture. Washington D.C.
- Reed, P.B., Jr., 1988. *National List of Plant Species That Occur in Wetlands: National Summary* U.S. Fish and Wildlife Service. Biol. Rep. 88 (26.9).
- Reed, P.B., Jr., D. Peters, J Goudzwaard, I. Lines, and F. Weinmann, 1993. *Supplement to National List of Plant Species That Occur in Wetlands: Northwest Region 9*. U.S. Fish and Wildlife Service. Supplement to Biol. Rep. 88 (26.9).
- Robert W. Lichvar and John T. Kartesz, 2009. North American Digital Flora: National Wetland Plant List, version 2.4.0 (https://wetland_plants.usace.army.mil). U.S. Army Corps of Engineers, Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory, Hanover, New Hampshire, and BONAP, Chapel Hill, North Carolina.
- Rylander, Brock, 2014. *Technical Memorandum: Harms Property Review*. Environmental Science Associates.
- Munsell® Color, 2000. *Munsell® soil color charts*. New Windsor, New York.

- Sheldon, D., T. Hruby, P. Johnson, K. Harper, A. McMillan, T. Granger, S. Stanley, and E. Stockdale, 2005. Wetlands in Washington State - Volume 1: A Synthesis of the Science. Washington State Department of Ecology. Publication #05-06-006. March, 2005. Olympia, Washington.
- U. S. Army Corps of Engineers (USACE), 2008. *Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in Rapanos v. United States & Carabella v. United States*. EPA/USACE. December 2, 2008.
- U. S. Army Corps of Engineers (USACE), 2010. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Ver2.0)*, ed. J.S. Wakeley, R.W. Lichvar, and C.V. Noble. ERDC/EL TR-10-3. U.S. Army Engineer Research and Development Center. Vicksburg, Mississippi.
- Washington State Department of Fish and Wildlife (WDFW), 2011. Priority Habitats and Species Mapper. Data accessed December 2014. <http://apps.wdfw.wa.gov/phsontheweb/>.

Appendix A – Methods and Tools

Table A-1. Methods and tools used to prepare the report.

Parameter	Method or Tool	Website	Reference
Wetland Delineation	USACE 1987 Wetland Delineation Manual	http://el.erdc.usace.army.mil/elpubs/pdf/wlman87.pdf	Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1, US Army Engineer Waterways Experiment Station, Vicksburg, Mississippi.
	Western Mountains, Valleys, and Coast Region Regional Supplement	http://www.usace.army.mil/Portals/2/docs/civilworks/regulatory/reg_supp/west_mt_finalsupp.pdf	U.S. Army Corps of Engineers. 2010. <i>Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0)</i> , 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 Center.
Wetland Classification	USFWS / Cowardin Classification System	http://www.fws.gov/wetlands/Documents/Classification-of-Wetlands-and-Deepwater-Habitats-of-the-United-States.pdf	Cowardin, L. M., V. Carter, F. C. Golet, E. T. LaRoe. 1979. Classification of wetlands and deepwater habitats of the United States. Government Printing Office, Washington, D.C.
	Hydrogeomorphic Classification (HGM) System	http://el.erdc.usace.army.mil/wetlands/pdfs/wrpd4.pdf	Brinson, M. M. (1993). "A hydrogeomorphic classification for wetlands," Technical Report WRP-DE-4, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.
Wetland Rating	Washington State Wetland Rating System	http://www.ecy.wa.gov/biblio/0406025.html	Hruby, T. 2004. Washington State wetland rating system for western Washington –Revised. Publication # 04-06-025.
	Mill Creek Municipal Code	http://www.codepublishing.com/wa/millcreek/	Uses Washington State Department of Ecology Rating System under Mill Creek Municipal Code Title 18.06.910
Wetland Indicator Status	National list of plant species that occur in wetlands	http://www.fws.gov/pacific/ecoservices/habcon/pdf/National%20List%20of%20Plant%20Species%201988.pdf	Robert W. Lichvar and John T. Kartesz 2009. North American Digital Flora: National Wetland Plant List, version 2.4.0 (https://wetland_plants.usace.army.mil). U.S. Army Corps of Engineers, Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory, Hanover, NH, and BONAP, Chapel Hill, NC.
Plant Names	USDA Plant Database	http://plants.usda.gov/	Website (see Appendix A)
Soils Data	NRCS Soil Survey	http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx	Website GIS data based upon: Debose, Alfonso, Klungland, Michael W. 1983. Soil Survey of Snohomish County Area, Washington. United States Department of Agriculture, Soil Conservation Service in Cooperation with Washington State Department of Natural Resources and Washington State University, Agricultural Research Center. Natural Resource Conservation Service.
Threatened and Endangered Species	Washington Natural Heritage Program	http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf	Washington Natural Heritage Program (Data published 10/15/08). Endangered, threatened, and sensitive plants of Washington. Washington State Department of Natural Resources, Washington Natural Heritage Program, Olympia, WA
	Washington Priority Habitats and Species	http://wdfw.wa.gov/hab/phspage.htm	Priority Habitats and Species (PHS) Program (Data produced 02/07/11). Map of priority habitats and species in project vicinity. Washington Department of Fish and Wildlife (WDFW).
	NOAA fisheries species list and maps	http://www.nwr.noaa.gov/ESA-Salmon-Listings/Salmon-Populations/Index.cfm and http://www.nmfs.noaa.gov/pr/species/	Website
	USFWS species lists by County	http://www.fws.gov/endangered/?s8fid=112761032793&s8fid=1127	Website

Parameter	Method or Tool	Website	Reference
		62573903&countyName=Kitsap%2C+wa	
Species of Local Importance	WDFW GIS Data	http://wdfw.wa.gov/mapping/salmonscape/	Website

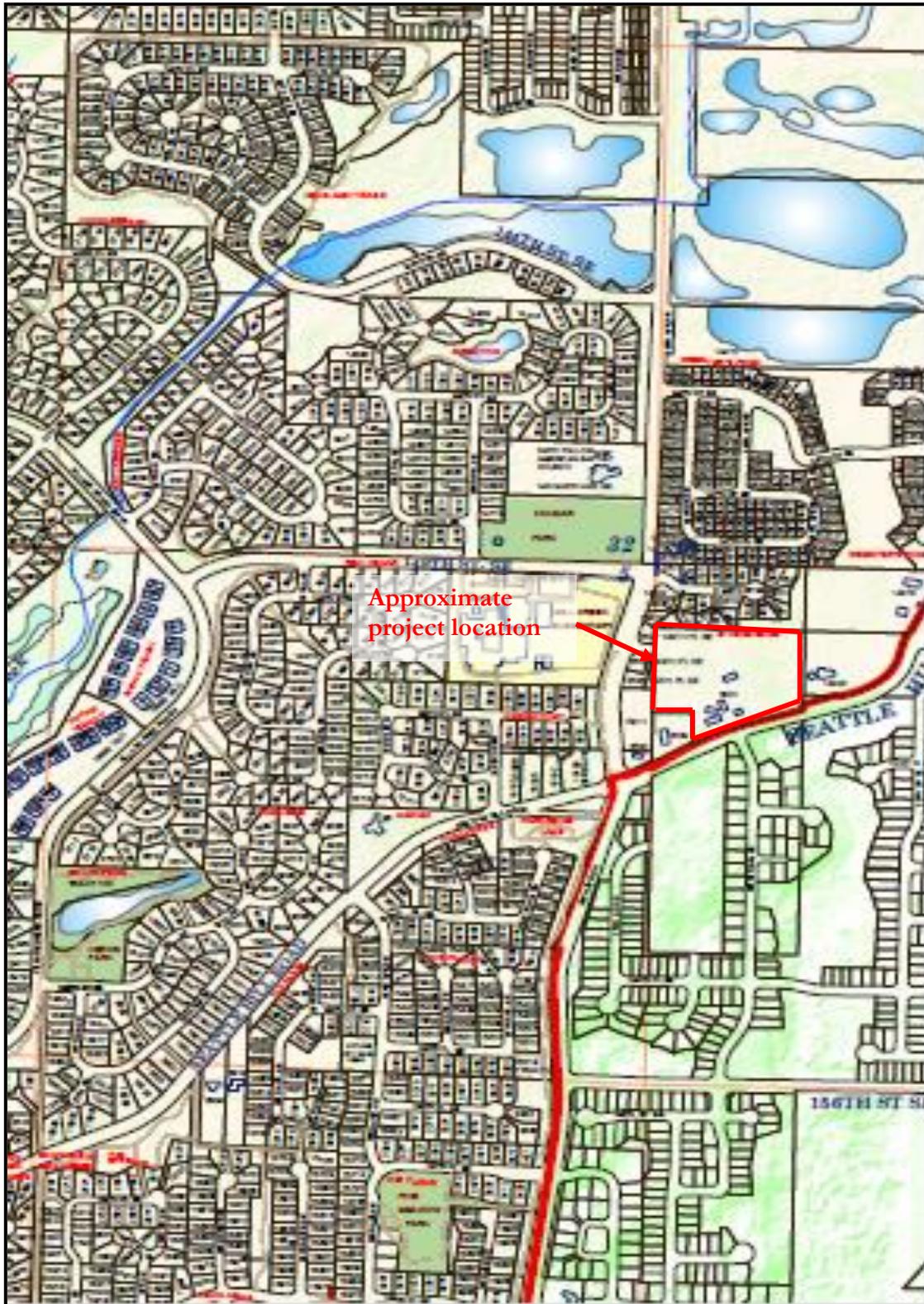
Appendix B – Background Information

This Appendix includes a USFWS National Wetland Inventory map (B1), Mill Creek Local Wetlands Inventory (B2), Snohomish County Topography Map (B3), WDFW SalmonScape (B4), WDFW Priority Habitat and Species Map (B5), and NRCS Soil Survey Map (B6).

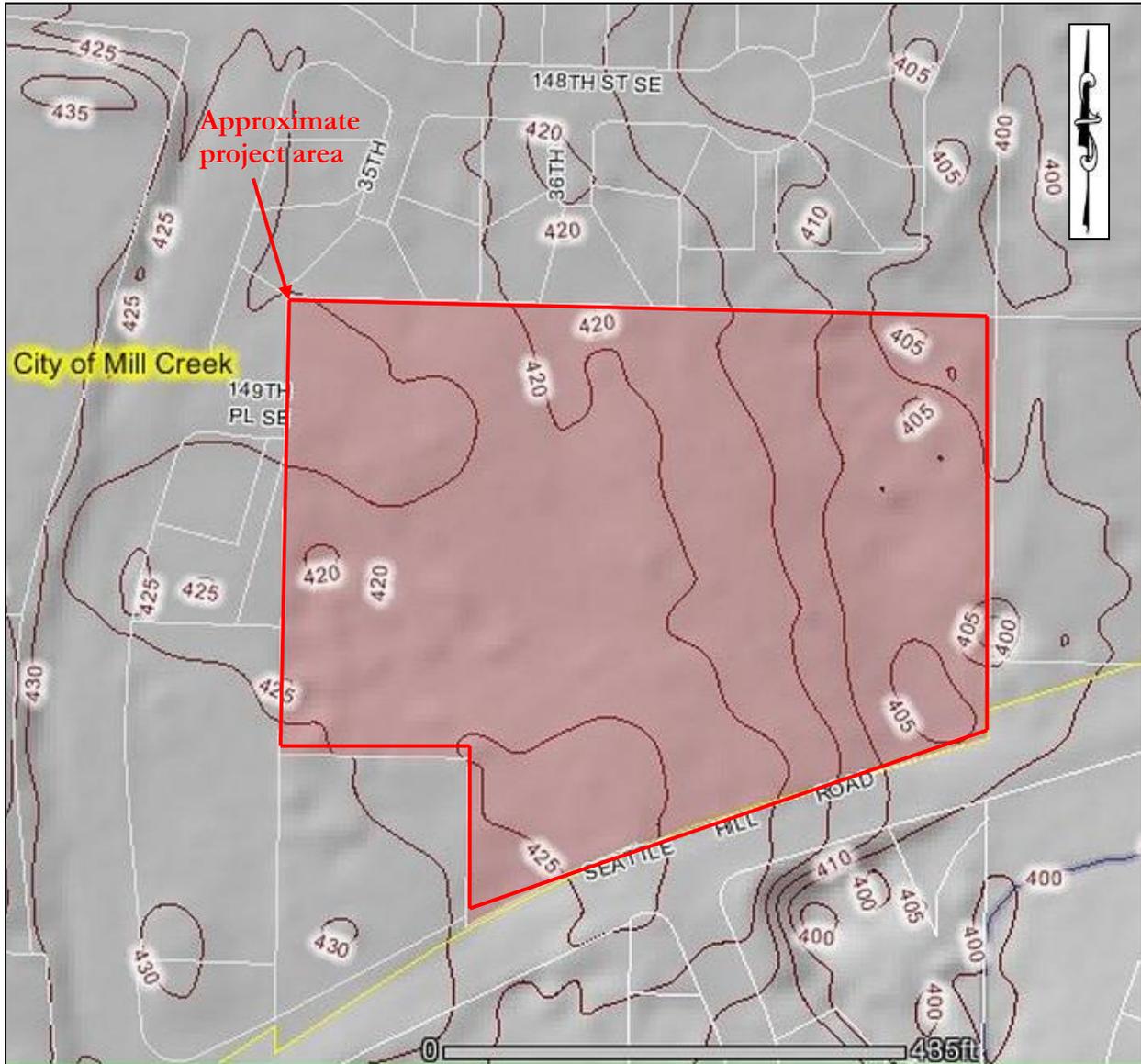
Appendix B1. USFWS National Wetland Inventory Map.



Appendix B2. City of Mill Creek Local Wetlands Inventory Map



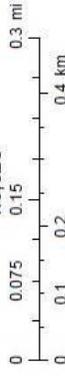
Appendix B3. Snohomish County Topography Map



Appendix B4. WDFW SalmonScape



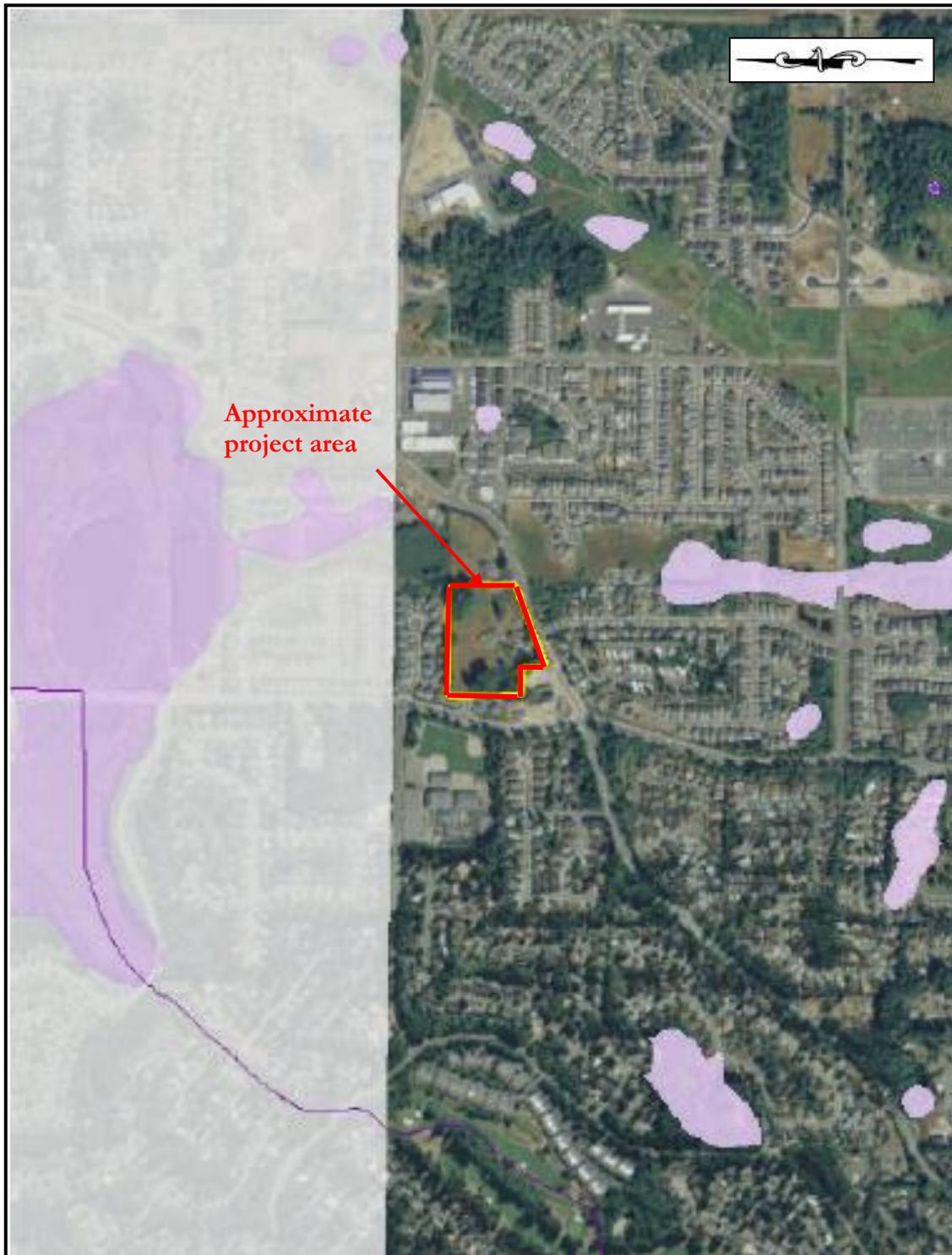
1:9,028



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and

January 12, 2015

Appendix B5. WDFW Priority and Habitat Species Map



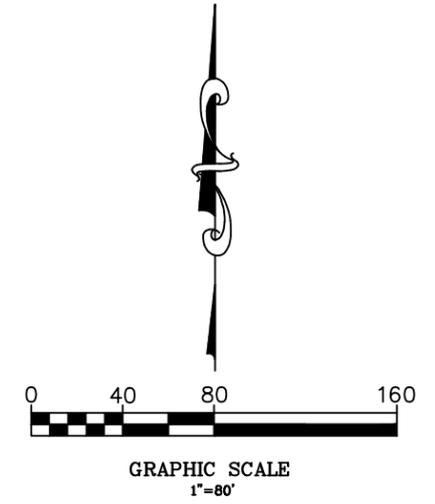
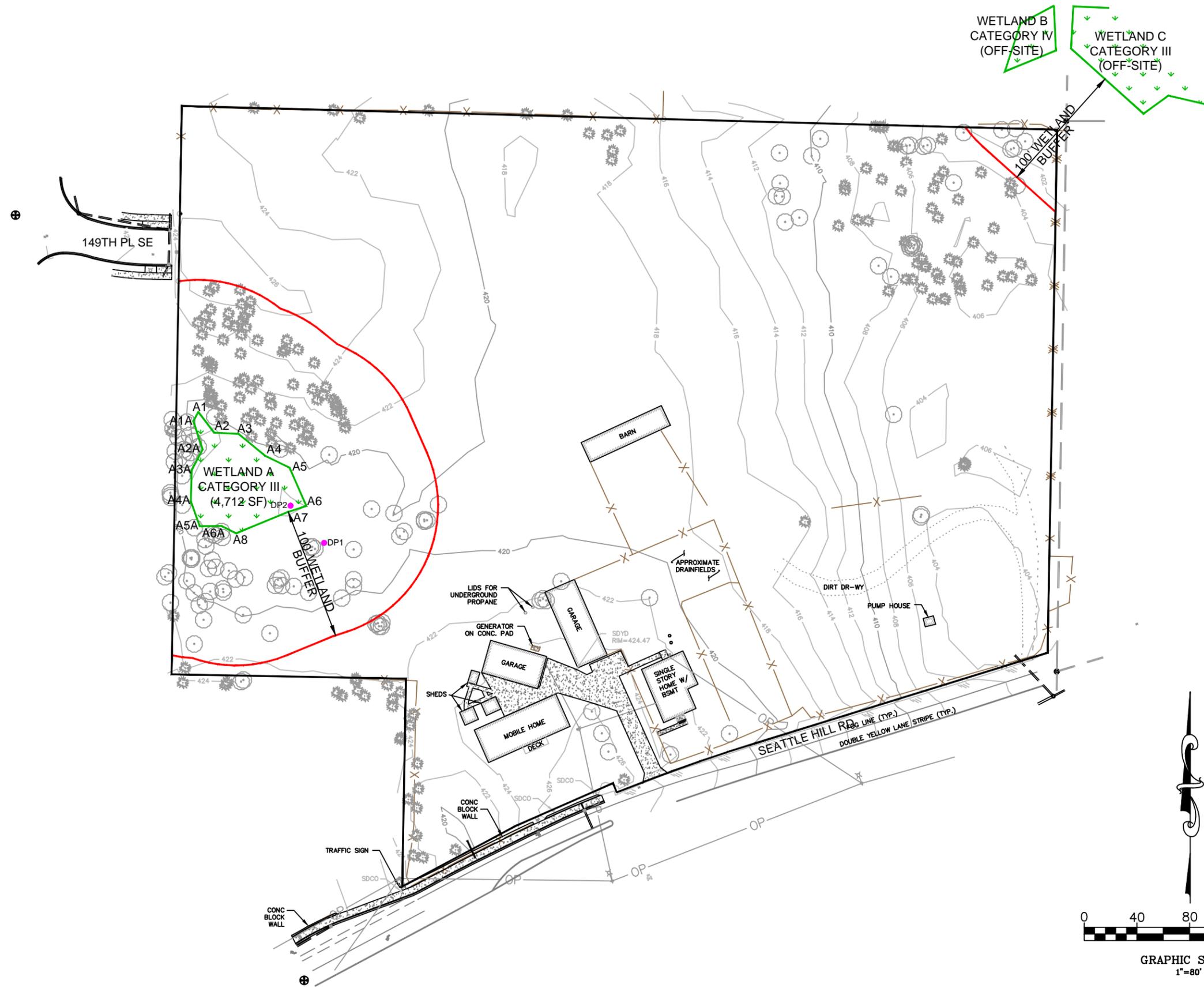
Appendix B6. NRCS Soil Survey Map.



Snohomish County Area, Washington (WA661)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
1	Alderwood gravelly sandy loam, 2 to 8 percent slopes	7.5	100.0%
Totals for Area of Interest		7.5	100.0%

Appendix C – Site Inventory and Proposed Project Maps

HARMS PROPERTY - SEATTLE HILL ROAD - EXISTING SITE INVENTORY



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GEONERCO PROPERTIES, WA LLC
HARMS PROPERTY-SEATTLE HILL ROAD
3601 SEATTLE HILL ROAD
MILL CREEK, WASHINGTON
THE SE 1/4 OF SECTION 04, TOWNSHIP 27N,
RANGE 05E, W.M.

DATE: 6/26/2015
JOB: 1155.0003
BY: JR
SCALE: 1" = 80'
SHEET 1 OF 2

HARMS PROPERTY - SEATTLE HILL ROAD - PROPOSED CHANGES



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 THE SE 1/4 OF SECTION 04, TOWNSHIP 27N,
 RANGE 05E, W.M.

DATE: 6/26/2015
 JOB: 1155.0003
 BY: JR
 SCALE: 1" = 80'
 SHEET 2 OF 2

Appendix D – Wetland Delineation Data Sheets

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

Project/Site: Mill Creek - Seattle Hill Road City/County: Mill Creek/Snohomish Sampling Date: 09/17/2014
 Applicant/Owner: Harbour Homes LLC State: WA Sampling Point: DP-01
 Investigator(s): Jim Carsner Section, Township, Range: S: 04, T: 27 North, R: 05 East
 Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): concave Slope (%): ≤1
 Subregion (LRR): A Lat: 47.86169 Long: -122.18491 Datum: WGS 84
 Soil Map Unit Name: Alderwood gravelly sandy loam, 2 to 8 percent slopes NWI classification: N/A

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

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: Precipitation was near normal for the water year and 140 percent of normal for the year-to-date. Not all three wetland criteria observed.	

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: <u>30 feet</u>)				
1. <u>Salix lasiandra</u>	<u>70</u>	Yes	<u>FACW</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____	<u>70</u>	= Total Cover		
Sapling/Shrub Stratum (Plot size: <u>15 feet</u>)				
1. <u>Spiraea douglasii</u>	<u>40</u>	Yes	<u>FACW</u>	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	<u>40</u>	= Total Cover		
Herb Stratum (Plot size: <u>5 feet</u>)				
1. <u>Ranunculus repens</u>	<u>80</u>	Yes	<u>FAC</u>	Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Wetland Non-Vascular Plants ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	<u>80</u>	= Total Cover		
Woody Vine Stratum (Plot size: <u>30 feet</u>)				
1. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
2. _____	_____	_____	_____	
				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
% Bare Ground in Herb Stratum <u>20</u>				

Remarks: Hydrophytic vegetation dominance test criteria met.

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

Project/Site: Mill Creek - Seattle Hill Road City/County: Mill Creek/Snohomish Sampling Date: 09/17/2014
 Applicant/Owner: Harbour Homes LLC State: WA Sampling Point: DP-02
 Investigator(s): Jim Carsner Section, Township, Range: S: 04, T: 27 North, R: 05 East
 Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Concave Slope (%): ≤1
 Subregion (LRR): A Lat: 47.86185 Long: -122.18506 Datum: WGS 84
 Soil Map Unit Name: Alderwood gravelly sandy loam, 2 to 8 percent slopes NWI classification: N/A

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

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: Precipitation was near normal for the water year and 140 percent of normal for the year-to-date. Not all three wetland criteria observed.	

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: <u>30 feet</u>)				
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____	<u>0</u>	= Total Cover		
Sapling/Shrub Stratum (Plot size: <u>15 feet</u>)				
1. <u>Spiraea douglasii</u>	<u>50</u>	<u>Yes</u>	<u>FACW</u>	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
2. <u>Malus fusca</u>	<u>20</u>	<u>Yes</u>	<u>FACW</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____	<u>70</u>	= Total Cover		
Herb Stratum (Plot size: <u>5 feet</u>)				
1. <u>Solanum dulcamara</u>	<u>5</u>	<u>Yes</u>	<u>FACW</u>	Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Wetland Non-Vascular Plants ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u>Ranunculus repens</u>	<u>1</u>	<u>Yes</u>	<u>FAC</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
_____	<u>6</u>	= Total Cover		
Woody Vine Stratum (Plot size: <u>30 feet</u>)				
1. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
2. _____	_____	_____	_____	
_____	<u>0</u>	= Total Cover		
% Bare Ground in Herb Stratum <u>94</u>				

Remarks: Hydrophytic vegetation dominance test criteria met.

Appendix E – Wetland Rating Forms

Wetland name or number 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 wetland (if known): Wetland A Date of site visit: 09/17/2014

Rated by: Jim Carsner Trained by Ecology? Yes X No Date of training: May 2007

SEC: 04 TOWNSHIP: 27 North RANGE: 05 East Is S/T/R in Appendix D? Yes No X

Map of wetland unit: Figure Appendix C Estimated size 4,712 square feet

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland: I II III X IV

Category I =	Score > 70
Category II =	Score 51 - 69
Category III =	Score 30 – 50
Category IV =	Score < 30

Score for Water Quality Functions	10
Score for Hydrologic Functions	10
Score for Habitat Functions	10
TOTAL Score for Functions	30

Category based on SPECIAL CHARACTERISTICS of Wetland I II Does not apply N/A

Final Category (choose the “highest” category from above”) III

Summary of basic information about the wetland unit.

Wetland Unit has Special Characteristics		Wetland HGM Class 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. <i>Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered animal or plant species (T/E species)?</i> For the purposes of this rating system, “documented” means the wetland is on the appropriate state or federal database.		X
SP2. <i>Has the wetland unit been documented as habitat for any State listed Threatened or Endangered animal species?</i> 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. <i>Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?</i>		X
SP4. <i>Does the wetland unit have a local significance in addition to its functions?</i> 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.

D Depressional and Flat Wetlands		Points
WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.		(only 1 score per box) (see p.38)
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) points = 3 • Unit has an intermittently flowing, OR highly constricted, permanently flowing outlet points = 2 • Unit has an unconstricted, or slightly constricted, surface outlet (<i>permanently flowing</i>) 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 (<i>If ditch is not permanently flowing treat unit as “intermittently flowing”</i>) Provide photo or drawing	Figure ____ 2
D 1.2	The soil 2 inches below the surface (or duff layer) is clay or organic (<i>use NRCS definitions</i>) 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 points = 5 • Wetland has persistent, ungrazed vegetation > = 1/2 of area points = 3 • Wetland has persistent, ungrazed vegetation > = 1/10 of area points = 1 • Wetland has persistent, ungrazed vegetation < 1/10 of area points = 0 Map of Cowardin vegetation classes	Figure ____ 1
D 1.4	Characteristics of seasonal ponding or inundation: <i>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.</i> • Area seasonally ponded is > 1/2 total area of wetland points = 4 • Area seasonally ponded is > 1/4 total area of wetland points = 2 • Area seasonally ponded is < 1/4 total area of wetland points = 0 Map of Hydroperiods	Figure ____ 2
Total for D 1		<i>Add the points in the boxes above</i> 5
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? <i>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.</i> <input type="checkbox"/> Grazing in the wetland or within 150 ft <input type="checkbox"/> Untreated stormwater discharges to wetland <input type="checkbox"/> Tilled fields or orchards within 150 ft. of wetland <input type="checkbox"/> A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging <input checked="" type="checkbox"/> Residential, urban areas, golf courses are within 150 ft. of wetland <input type="checkbox"/> Wetland is fed by groundwater high in phosphorus or nitrogen <input type="checkbox"/> Other _____ YES multiplier is 2 NO multiplier is 1		Multiplier 2
◆ TOTAL – Water Quality Functions Multiply the score from D1 by D2; then <i>add score to table on p. 1</i>		10
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) 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 (<i>If ditch is not permanently flowing treat unit as “intermittently flowing”</i>) • Unit has an unconstricted, or slightly constricted, surface outlet (<i>permanently flowing</i>) points = 0	2
D 3.2	Depth of storage during wet periods. <i>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).</i> • 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
D 3.3	Contribution of wetland unit to storage in the watershed: <i>Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.</i> • 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 • The area of the basin is more than 100 times the area of the unit points = 0 • Entire unit is in the FLATS class points = 5	3
Total for D 3		<i>Add the points in the boxes above</i> 5

	<p>H 2.3 <u>Near or adjacent to other priority habitats listed by WDFW</u> (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)</p> <p>Which of the following priority habitats are within 330 ft. (100m) of the wetland unit? <i>NOTE: the connections do not have to be relatively undisturbed.</i></p> <p><input type="checkbox"/> Aspen Stands: Pure or mixed stands of aspen greater than 0.4 ha (1 acre).</p> <p><input type="checkbox"/> 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).</p> <p><input type="checkbox"/> Herbaceous Balds: Variable size patches of grass and forbs on shallow soils over bedrock.</p> <p><input type="checkbox"/> 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 than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest.</p> <p><input type="checkbox"/> 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).</p> <p><input type="checkbox"/> Riparian: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.</p> <p><input type="checkbox"/> 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).</p> <p><input type="checkbox"/> 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.</p> <p><input type="checkbox"/> 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).</p> <p><input type="checkbox"/> 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.</p> <p><input type="checkbox"/> Cliffs: Greater than 7.6 m (25 ft) high and occurring below 5000 ft.</p> <p><input type="checkbox"/> 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.</p> <p><input checked="" type="checkbox"/> 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.</p> <p style="padding-left: 40px;">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</p> <p>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)</p>	1
	<p>H 2.4 <u>Wetland Landscape:</u> Choose the one description of the landscape around the wetland that best fits (see p. 84)</p> <ul style="list-style-type: none"> • 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 disturbed.points = 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 mile.....points = 0 	3
	<p>H 2 TOTAL Score – opportunity for providing habitat Add the scores from H2.1, H2.2, H2.3, H2.4</p>	6
	<p style="text-align: right;"><i>TOTAL for H 1 from page 8</i></p>	4
◆	<p>Total Score for Habitat Functions Add the points for H 1 and H 2; then record the result on p. 1</p>	10

Comments:

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	<p>Estuarine wetlands? (see p.86)</p> <p>Does the wetland unit meet the following criteria for Estuarine wetlands?</p> <p><input type="checkbox"/> The dominant water regime is tidal,</p> <p><input type="checkbox"/> Vegetated, and</p> <p><input type="checkbox"/> With a salinity greater than 0.5 ppt.</p> <p style="text-align: center;">YES = Go to SC 1.1 NO <u> X </u></p>
	<p>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</p>
	<p>SC 1.2 Is the wetland at least 1 acre in size and meets at least two of the following conditions?</p> <p style="text-align: center;">YES = Category I NO = Category II</p> <p><input type="checkbox"/> The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If 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 <i>Spartina</i> would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category I. Do not, however, exclude the area of <i>Spartina</i> in determining the size threshold of 1 acre.</p> <p><input type="checkbox"/> 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</p> <p><input type="checkbox"/> The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.</p>
	<p>Cat. I</p> <p>Cat. I</p> <p>Cat. II</p> <p>Dual Rating I/II</p>
SC2	<p>Natural Heritage Wetlands (see p. 87)</p> <p>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.</p> <p>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.)</p> <p>S/T/R information from Appendix D _____ or accessed from WNHP/DNR web site _____</p> <p style="text-align: center;">YES _____ Contact WNHP/DNR (see p. 79) and go to SC 2.2 NO <u> X </u></p> <p>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?</p> <p style="text-align: center;">YES = Category 1 NO <u> X </u> not a Heritage Wetland</p>
	<p>Cat I</p>
SC3	<p>Bogs (see p. 87)</p> <p>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. <i>If you answer yes you will still need to rate the wetland based on its function.</i></p> <p>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</p> <p>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</p> <p>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)?</p> <p style="text-align: center;">YES = Is a bog for purpose of rating NO = go to question 4</p> <p>NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16” deep. If the pH is less than 5.0 and the “bog” plant species in Table 3 are present, the wetland is a bog.</p> <p>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)?</p> <p style="text-align: center;">YES = Category I NO = Is not a bog for purpose of rating</p>
	<p>Cat. I</p>

Wetland name or number B

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 B Date of site visit: 09/17/2014

Rated by: Jim Carsner Trained by Ecology? Yes X No Date of training: May 2007

SEC: 04 TWNSHP: 27 North RNGE: 05 East Is S/T/R in Appendix D? Yes No X

Map of wetland unit: Figure: N/A Estimated size N/A

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland: I II III **IV**

Category I =	Score > 70
Category II =	Score 51 - 69
Category III =	Score 30 – 50
Category IV =	Score < 30

Score for Water Quality Functions	10
Score for Hydrologic Functions	10
Score for Habitat Functions	8
TOTAL Score for Functions	28

Category based on SPECIAL CHARACTERISTICS of Wetland I II Does not apply X

Final Category (choose the “highest” category from above”) IV

Summary of basic information about the wetland unit.

Wetland Unit has Special Characteristics		Wetland HGM Class 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. <i>Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered animal or plant species (T/E species)?</i> For the purposes of this rating system, “documented” means the wetland is on the appropriate state or federal database.		X
SP2. <i>Has the wetland unit been documented as habitat for any State listed Threatened or Endangered animal species?</i> 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. <i>Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?</i>		X
SP4. <i>Does the wetland unit have a local significance in addition to its functions?</i> 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.

D 4	<p>Does the wetland have the <u>opportunity</u> to reduce flooding and erosion?</p> <p>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></p> <p>_____ Wetland is in a headwater of a river or stream that has flooding problems.</p> <p>_____ Wetland drains to a river or stream that has flooding problems</p> <p><u>X</u> Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems</p> <p>_____ Other _____</p> <p style="text-align: center;">YES multiplier is <u>2</u> NO multiplier is 1</p>	<p>(see p. 49)</p> <p>Multiplier</p> <p style="text-align: center;"><u>2</u></p>
◆	<p>TOTAL – Hydrologic Functions Multiply the score from D3 by D4; then <i>add score to table on p. 1</i></p>	<p style="text-align: center;">10</p>

Comments:

<p><i>These questions apply to wetlands of all HGM classes.</i></p> <p>HABITAT FUNCTIONS – Indicators that wetland functions to provide important habitat.</p>		<p>Points (only 1 score per box)</p>										
H 1	Does the wetland have the <u>potential</u> to provide habitat for many species?											
	<p>H 1.1 <u>Vegetation structure</u> (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. <input type="checkbox"/> Aquatic Bed <input checked="" type="checkbox"/> Emergent plants <input checked="" type="checkbox"/> Scrub/shrub (areas where shrubs have > 30% cover) <input type="checkbox"/> Forested (areas where trees have > 30% cover) If the unit has a forested class check if: <input type="checkbox"/> The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon. Add the number of vegetation types that qualify. If you have: <table style="margin-left: 20px;"> <tr> <td>4 structures or more</td> <td>points = 4</td> <td>Map of Cowardin vegetation classes</td> <td>3 structures</td> <td>points = 2</td> </tr> <tr> <td>2 structures</td> <td>points = 1</td> <td></td> <td>1 structure</td> <td>points = 0</td> </tr> </table> </p>	4 structures or more	points = 4	Map of Cowardin vegetation classes	3 structures	points = 2	2 structures	points = 1		1 structure	points = 0	<p>Figure _____</p> <p style="text-align: right;">0</p>
4 structures or more	points = 4	Map of Cowardin vegetation classes	3 structures	points = 2								
2 structures	points = 1		1 structure	points = 0								
	<p>H 1.2 <u>Hydroperiods</u> (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). <input type="checkbox"/> Permanently flooded or inundated <input checked="" type="checkbox"/> Seasonally flooded or inundated <input type="checkbox"/> Occasionally flooded or inundated <input type="checkbox"/> Saturated only <input type="checkbox"/> Permanently flowing stream or river in, or adjacent to, the wetland <input type="checkbox"/> Seasonally flowing stream in, or adjacent to, the wetland <input type="checkbox"/> Lake-fringe wetland = 2 points <input type="checkbox"/> Freshwater tidal wetland = 2 points <table style="margin-left: 20px;"> <tr> <td>4 or more types present</td> <td>points = 3</td> <td rowspan="4" style="vertical-align: middle;">Map of hydroperiods</td> </tr> <tr> <td>3 or more types present</td> <td>points = 2</td> </tr> <tr> <td>2 types present</td> <td>points = 1</td> </tr> <tr> <td>1 type present</td> <td>points = 0</td> </tr> </table> </p>	4 or more types present	points = 3	Map of hydroperiods	3 or more types present	points = 2	2 types present	points = 1	1 type present	points = 0	<p>Figure _____</p> <p style="text-align: right;">0</p>	
4 or more types present	points = 3	Map of hydroperiods										
3 or more types present	points = 2											
2 types present	points = 1											
1 type present	points = 0											
	<p>H 1.3 <u>Richness of Plant Species</u> (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: <table style="margin-left: 20px;"> <tr> <td>> 19 species</td> <td>points = 2</td> </tr> <tr> <td>5 – 19 species</td> <td>points = 1</td> </tr> <tr> <td>< 5 species</td> <td>points = 0</td> </tr> </table> List species below if you want to: _____ _____ _____ </p>	> 19 species	points = 2	5 – 19 species	points = 1	< 5 species	points = 0	<p style="text-align: right;">1</p>				
> 19 species	points = 2											
5 – 19 species	points = 1											
< 5 species	points = 0											
	<p>H 1.4 <u>Interspersion of Habitats</u> (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.</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>None = 0 points</p> </div> <div style="text-align: center;">  <p>Low = 1 point</p> </div> <div style="text-align: center;">  <p>Moderate = 2 points</p> </div> <div style="text-align: center;">  <p>High = 3 points</p> </div> </div> <p style="text-align: center;">[riparian braided channels]</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always “high”.</p> <p>Use map of Cowardin classes.</p> </div>	<p>Figure _____</p> <p style="text-align: right;">0</p>										
	<p>H 1.5 <u>Special Habitat Features</u> (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. <input checked="" type="checkbox"/> Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft. long) <input type="checkbox"/> Standing snags (diameter at the bottom > 4 inches) in the wetland <input type="checkbox"/> 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) <input type="checkbox"/> Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present (cut shrubs or trees that have not yet turned grey/brown) <input type="checkbox"/> 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) <input checked="" type="checkbox"/> 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. </p>	<p style="text-align: right;">2</p>										
H 1 TOTAL Score – potential for providing habitat		<p>Add the points in the column above</p> <p style="text-align: right;">3</p>										

H 2	Does the wetland have the <u>opportunity</u> to provide habitat for many species?	(only 1 score per box)
	<p>H 2.1 Buffers (see P. 80): <i>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".</i></p> <p>___ 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</p> <p>___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference points = 4</p> <p>___ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference points = 4</p> <p>___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference points = 3</p> <p>___ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference points = 3</p> <p>If buffer does not meet any of the criteria above:</p> <p>___ 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</p> <p>___ No paved areas of buildings within 50m of wetland for > 50% circumference. Light to moderate grazing or lawns are OK points = 2</p> <p>___ Heavy grazing in buffer points = 1</p> <p>___ 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</p> <p><u>X</u> Buffer does not meet any of the criteria above points = 1</p> <p style="text-align: right;">Arial photo showing buffers</p>	<p>Figure _____</p> <p style="text-align: center;">1</p>
	<p>H 2.2 Corridors and Connections (see p. 81)</p> <p>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? (<i>Dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor.</i>)</p> <p style="text-align: center;">YES = 4 points (go to H 2.3) NO = go to H 2.2.2</p> <p>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 Lake-fringe wetland, if it does not have an undisturbed corridor as in the question above?</p> <p style="text-align: center;">YES = 2 points (go to H 2.3) NO = go to H 2.2.3</p> <p>H. 2.2.3 Is the wetland:</p> <ul style="list-style-type: none"> • 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? <p style="text-align: center;">YES = 1 point NO = 0 points</p>	<p style="text-align: center;">0</p>

Comments:

	<p>H 2.3 <u>Near or adjacent to other priority habitats listed by WDFW</u> (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)</p> <p>Which of the following priority habitats are within 330 ft. (100m) of the wetland unit? <i>NOTE: the connections do not have to be relatively undisturbed.</i></p> <p>___ Aspen Stands: Pure or mixed stands of aspen greater than 0.4 ha (1 acre).</p> <p>___ 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).</p> <p>___ Herbaceous Balds: Variable size patches of grass and forbs on shallow soils over bedrock.</p> <p>___ 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 than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest.</p> <p>___ 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).</p> <p>___ Riparian: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.</p> <p>___ 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).</p> <p>___ 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.</p> <p>___ 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).</p> <p>___ 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.</p> <p>___ Cliffs: Greater than 7.6 m (25 ft) high and occurring below 5000 ft.</p> <p>___ 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.</p> <p><u>X</u> 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.</p> <p>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</p> <p>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)</p>	1
	<p>H 2.4 <u>Wetland Landscape:</u> Choose the one description of the landscape around the wetland that best fits (see p. 84)</p> <ul style="list-style-type: none"> • 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 points = 5 • There are at least 3 other wetlands within 1/2 mile, BUT the connections between them are disturbed. points = 3 • The wetland fringe on a lake with disturbance and there are 3 other lake-fringe wetlands within 1/2 mile points = 3 • There is at least 1 wetland within 1/2 mile points = 2 • There are no wetlands within 1/2 mile points = 0 	3
	<p>H 2 TOTAL Score – opportunity for providing habitat Add the scores from H2.1, H2.2, H2.3, H2.4</p>	5
	<p style="text-align: right;"><i>TOTAL for H 1 from page 8</i></p>	3
◆	<p>Total Score for Habitat Functions Add the points for H 1 and H 2; then record the result on p. 1</p>	8

Comments:

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	<p>Estuarine wetlands? (see p.86)</p> <p>Does the wetland unit meet the following criteria for Estuarine wetlands?</p> <p><input type="checkbox"/> The dominant water regime is tidal,</p> <p><input type="checkbox"/> Vegetated, and</p> <p><input type="checkbox"/> With a salinity greater than 0.5 ppt.</p> <p>YES = Go to SC 1.1 NO <u> X </u></p>
	<p>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</p>
	<p>SC 1.2 Is the wetland at least 1 acre in size and meets at least two of the following conditions?</p> <p>YES = Category I NO = Category II</p> <p><input type="checkbox"/> The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If 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 <i>Spartina</i> would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category I. Do not, however, exclude the area of <i>Spartina</i> in determining the size threshold of 1 acre.</p> <p><input type="checkbox"/> 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</p> <p><input type="checkbox"/> The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.</p>
	<p>Cat. I</p> <p>Cat. I</p> <p>Cat. II</p> <p>Dual Rating I/II</p>
SC2	<p>Natural Heritage Wetlands (see p. 87)</p> <p>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.</p> <p>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.)</p> <p>S/T/R information from Appendix D <u> X </u> or accessed from WNHP/DNR web site <u> </u></p> <p>YES <u> </u> Contact WNHP/DNR (see p. 79) and go to SC 2.2 NO <u> X </u></p> <p>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?</p> <p>YES = Category 1 NO <u> </u> not a Heritage Wetland</p>
	<p>Cat I</p>
SC3	<p>Bogs (see p. 87)</p> <p>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. <i>If you answer yes you will still need to rate the wetland based on its function.</i></p> <p>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</p> <p>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</p> <p>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)?</p> <p>YES = Is a bog for purpose of rating NO = go to question 4</p> <p>NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16” deep. If the pH is less than 5.0 and the “bog” plant species in Table 3 are present, the wetland is a bog.</p> <p>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)?</p> <p>YES = Category I NO = Is not a bog for purpose of rating</p>
	<p>Cat. I</p>

Wetland name or number C

The City of Mill Creek's third party reviewer, ESA, determined Wetland C to be a Category II wetland, therefore Wetland C is treated as Category II in the report.

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 C Date of site visit: 09/17/2014

Rated by: Jim Carsner Trained by Ecology? Yes X No Date of training: May 2007

SEC: 04 TWNSHP: 27 North RNGE: 05 East Is S/T/R in Appendix D? Yes No X

Map of wetland unit: Figure: Appendix C Estimated size N/A

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland: I II III X IV

Category I =	Score > 70
Category II =	Score 51 - 69
Category III =	Score 30 – 50
Category IV =	Score < 30

Score for Water Quality Functions	14
Score for Hydrologic Functions	16
Score for Habitat Functions	8
TOTAL Score for Functions	38

Category based on SPECIAL CHARACTERISTICS of Wetland I II Does not apply X

Final Category (choose the “highest” category from above”) III

Summary of basic information about the wetland unit.

Wetland Unit has Special Characteristics		Wetland HGM Class 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. <i>Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered animal or plant species (T/E species)?</i> For the purposes of this rating system, “documented” means the wetland is on the appropriate state or federal database.				X
SP2. <i>Has the wetland unit been documented as habitat for any State listed Threatened or Endangered animal species?</i> 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. <i>Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?</i>				X
SP4. <i>Does the wetland unit have a local significance in addition to its functions?</i> 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.

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.

<i>HGM Classes within the wetland unit being rated</i>	<i>HGM Class to Use in Rating</i>
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 freshwater wetland	Treat as ESTUARINE under wetlands with special 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) (see p.38)
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: <ul style="list-style-type: none"> Unit is a depression with no surface water leaving it (no outlet) points = 3 Unit has an intermittently flowing, OR highly constricted, permanently flowing outlet points = 2 Unit has an unconstricted, or slightly constricted, surface outlet (<i>permanently flowing</i>) 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 	Figure ____ 2
D 1.2	The soil 2 inches below the surface (or duff layer) is clay or organic (<i>use NRCS definitions</i>) YES points = 4 NO points = 0	0
D 1.3	Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class): <ul style="list-style-type: none"> Wetland has persistent, ungrazed vegetation > = 95% of area points = 5 Wetland has persistent, ungrazed vegetation > = 1/2 of area points = 3 Wetland has persistent, ungrazed vegetation > = 1/10 of area points = 1 Wetland has persistent, ungrazed vegetation < 1/10 of area points = 0 Map of Cowardin vegetation classes	Figure ____ 3
D 1.4	Characteristics of seasonal ponding or inundation: <i>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.</i> <ul style="list-style-type: none"> Area seasonally ponded is > 1/2 total area of wetland points = 4 Area seasonally ponded is > 1/4 total area of wetland points = 2 Area seasonally ponded is < 1/4 total area of wetland points = 0 Map of Hydroperiods	Figure ____ 2
Total for D 1		<i>Add the points in the boxes above</i> 7
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? <i>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.</i> <ul style="list-style-type: none"> ___ 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 <u>X</u> Residential, urban areas, golf courses are within 150 ft. of wetland ___ Wetland is fed by groundwater high in phosphorus or nitrogen ___ Other _____ YES multiplier is 2 NO multiplier is 1		Multiplier 2
◆ TOTAL – Water Quality Functions Multiply the score from D1 by D2; then <i>add score to table on p. 1</i>		14
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 <ul style="list-style-type: none"> 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 (<i>permanently flowing</i>) points = 0 	2
D 3.2	Depth of storage during wet periods. <i>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).</i> <ul style="list-style-type: none"> 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) but has small depressions on the surface that trap water points = 1 Marks of ponding less than 0.5 ft points = 0 	3
D 3.3	Contribution of wetland unit to storage in the watershed: <i>Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.</i> <ul style="list-style-type: none"> 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 The area of the basin is more than 100 times the area of the unit points = 0 Entire unit is in the FLATS class points = 5 	3
Total for D 3		<i>Add the points in the boxes above</i> 8

D 4	<p>Does the wetland have the <u>opportunity</u> to reduce flooding and erosion?</p> <p>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></p> <p><input type="checkbox"/> Wetland is in a headwater of a river or stream that has flooding problems.</p> <p><input checked="" type="checkbox"/> Wetland drains to a river or stream that has flooding problems</p> <p><input type="checkbox"/> Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems</p> <p><input type="checkbox"/> Other _____</p> <p style="text-align: center;">YES multiplier is 2 NO multiplier is 1</p>	<p>(see p. 49)</p> <p>Multiplier</p> <p style="text-align: center;"><u>2</u></p>
◆	<p>TOTAL – Hydrologic Functions Multiply the score from D3 by D4; then <i>add score to table on p. 1</i></p>	<p style="text-align: center;">16</p>

Comments:

These questions apply to wetlands of all HGM classes. HABITAT FUNCTIONS – Indicators that wetland functions to provide important habitat.		Points (only 1 score per box)								
H 1	Does the wetland have the <u>potential</u> to provide habitat for many species?	Figure _____								
	<p>H 1.1 <u>Vegetation structure</u> (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.</p> <p> <input type="checkbox"/> Aquatic Bed <input checked="" type="checkbox"/> Emergent plants <input checked="" type="checkbox"/> Scrub/shrub (areas where shrubs have > 30% cover) <input type="checkbox"/> Forested (areas where trees have > 30% cover) If the unit has a forested class check if: <input type="checkbox"/> The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon. Add the number of vegetation types that qualify. If you have: </p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">4 structures or more points = 4</td> <td style="width: 50%; text-align: right;">Map of Cowardin vegetation classes</td> </tr> <tr> <td>2 structures points = 1</td> <td style="text-align: right;">3 structures points = 2</td> </tr> <tr> <td></td> <td style="text-align: right;">1 structure points = 0</td> </tr> </table>	4 structures or more points = 4	Map of Cowardin vegetation classes	2 structures points = 1	3 structures points = 2		1 structure points = 0	0		
4 structures or more points = 4	Map of Cowardin vegetation classes									
2 structures points = 1	3 structures points = 2									
	1 structure points = 0									
	<p>H 1.2 <u>Hydroperiods</u> (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).</p> <p> <input type="checkbox"/> Permanently flooded or inundated <input checked="" type="checkbox"/> Seasonally flooded or inundated <input type="checkbox"/> Occasionally flooded or inundated <input type="checkbox"/> Saturated only <input type="checkbox"/> Permanently flowing stream or river in, or adjacent to, the wetland <input type="checkbox"/> Seasonally flowing stream in, or adjacent to, the wetland <input type="checkbox"/> Lake-fringe wetland = 2 points <input type="checkbox"/> Freshwater tidal wetland = 2 points </p> <p style="text-align: right;">Map of hydroperiods</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">4 or more types present points = 3</td> <td style="width: 50%;"></td> </tr> <tr> <td>3 or more types present points = 2</td> <td></td> </tr> <tr> <td>2 types present points = 1</td> <td></td> </tr> <tr> <td>1 type present points = 0</td> <td></td> </tr> </table>	4 or more types present points = 3		3 or more types present points = 2		2 types present points = 1		1 type present points = 0		0
4 or more types present points = 3										
3 or more types present points = 2										
2 types present points = 1										
1 type present points = 0										
	<p>H 1.3 <u>Richness of Plant Species</u> (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: </p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">> 19 species points = 2</td> <td style="width: 50%;"></td> </tr> <tr> <td>5 – 19 species points = 1</td> <td></td> </tr> <tr> <td>< 5 species points = 0</td> <td></td> </tr> </table> <p>List species below if you want to:</p> <p>_____</p> <p>_____</p> <p>_____</p>	> 19 species points = 2		5 – 19 species points = 1		< 5 species points = 0		1		
> 19 species points = 2										
5 – 19 species points = 1										
< 5 species points = 0										
	<p>H 1.4 <u>Interspersion of Habitats</u> (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.</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>None = 0 points</p> </div> <div style="text-align: center;">  <p>Low = 1 point</p> </div> <div style="text-align: center;">  <p>Moderate = 2 points</p> </div> <div style="text-align: center;">  <p>High = 3 points</p> </div> </div> <p style="text-align: center;">[riparian braided channels]</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always “high”.</p> <p>Use map of Cowardin classes.</p> </div>	0								
	<p>H 1.5 <u>Special Habitat Features</u> (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.</p> <p> <input checked="" type="checkbox"/> Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft. long) <input type="checkbox"/> Standing snags (diameter at the bottom > 4 inches) in the wetland <input type="checkbox"/> 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) <input type="checkbox"/> Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present (cut shrubs or trees that have not yet turned grey/brown) <input type="checkbox"/> 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) <input checked="" type="checkbox"/> 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. </p>	2								
H 1 TOTAL Score – potential for providing habitat		Add the points in the column above 3								

	<p>H 2.3 <u>Near or adjacent to other priority habitats listed by WDFW</u> (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)</p> <p>Which of the following priority habitats are within 330 ft. (100m) of the wetland unit? <i>NOTE: the connections do not have to be relatively undisturbed.</i></p> <p>___ Aspen Stands: Pure or mixed stands of aspen greater than 0.4 ha (1 acre).</p> <p>___ 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).</p> <p>___ Herbaceous Balds: Variable size patches of grass and forbs on shallow soils over bedrock.</p> <p>___ 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 than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest.</p> <p>___ 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).</p> <p>___ Riparian: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.</p> <p>___ 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).</p> <p>___ 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.</p> <p>___ 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).</p> <p>___ 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.</p> <p>___ Cliffs: Greater than 7.6 m (25 ft) high and occurring below 5000 ft.</p> <p>___ 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.</p> <p><u>X</u> 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.</p> <p>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</p> <p>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)</p>	1
	<p>H 2.4 <u>Wetland Landscape:</u> Choose the one description of the landscape around the wetland that best fits (see p. 84)</p> <ul style="list-style-type: none"> • 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 points = 5 • There are at least 3 other wetlands within 1/2 mile, BUT the connections between them are disturbed. points = 3 • The wetland fringe on a lake with disturbance and there are 3 other lake-fringe wetlands within 1/2 mile points = 3 • There is at least 1 wetland within 1/2 mile points = 2 • There are no wetlands within 1/2 mile points = 0 	3
<p>H 2 TOTAL Score – opportunity for providing habitat Add the scores from H2.1, H2.2, H2.3, H2.4</p>		5
<p style="text-align: right;"><i>TOTAL for H 1 from page 8</i></p>		3
◆	<p>Total Score for Habitat Functions Add the points for H 1 and H 2; then record the result on p. 1</p>	8

Comments:

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	<p>Estuarine wetlands? (see p.86)</p> <p>Does the wetland unit meet the following criteria for Estuarine wetlands?</p> <p><input type="checkbox"/> The dominant water regime is tidal,</p> <p><input type="checkbox"/> Vegetated, and</p> <p><input type="checkbox"/> With a salinity greater than 0.5 ppt.</p> <p>YES = Go to SC 1.1 NO <u> X </u></p>
	<p>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</p>
	<p>SC 1.2 Is the wetland at least 1 acre in size and meets at least two of the following conditions?</p> <p>YES = Category I NO = Category II</p> <p><input type="checkbox"/> The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If 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 <i>Spartina</i> would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category I. Do not, however, exclude the area of <i>Spartina</i> in determining the size threshold of 1 acre.</p> <p><input type="checkbox"/> 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</p> <p><input type="checkbox"/> The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.</p>
	<p>Cat. I</p> <p>Cat. II</p> <p>Dual Rating I/II</p>
SC2	<p>Natural Heritage Wetlands (see p. 87)</p> <p>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.</p> <p>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.)</p> <p>S/T/R information from Appendix D _____ or accessed from WNHP/DNR web site _____</p> <p>YES _____ Contact WNHP/DNR (see p. 79) and go to SC 2.2 NO <u> X </u></p> <p>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?</p> <p>YES = Category 1 NO <u> X </u> not a Heritage Wetland</p>
	<p>Cat I</p>
SC3	<p>Bogs (see p. 87)</p> <p>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. <i>If you answer yes you will still need to rate the wetland based on its function.</i></p> <p>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</p> <p>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</p> <p>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)?</p> <p>YES = Is a bog for purpose of rating NO = go to question 4</p> <p>NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16” deep. If the pH is less than 5.0 and the “bog” plant species in Table 3 are present, the wetland is a bog.</p> <p>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)?</p> <p>YES = Category I NO = Is not a bog for purpose of rating</p>
	<p>Cat. I</p>

<p>SC4</p>	<p>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? <i>If you answer yes you will still need to rate the wetland based on its function.</i> ___ 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. YES = Category I NO = <u> X </u> not a forested wetland with special characteristics</p>	<p>Cat. I</p>
<p>SC5</p>	<p>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 (<i>needs to be measured near the bottom.</i>) YES = Go to SC 5.1 NO <u> X </u> 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</p>	<p>Cat. I Cat. II</p>
<p>SC6</p>	<p>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 <u> X </u> not an interdunal wetland for rating <i>If you answer yes you will still need to rate the wetland based on its functions.</i> 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 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</p>	<p>Cat. II Cat. III</p>
<p>◆</p>	<p>Category of wetland based on Special Characteristics 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</p>	<p>N/A</p>

Comments:

Appendix F – Qualifications

All field inspections, jurisdictional wetland boundary delineations, habitat assessments, and supporting documentation, including this ***Wetland and Fish and Wildlife Habitat Assessment*** prepared for the ***3601 Seattle-Hill Road, Mill Creek*** property were prepared by, or under the direction of, Jeremy Downs, Jim Carsner, and Railin Santiago of Soundview Consultants ^{LLC}.

Jeremy Downs, Principal Scientist and Environmental Planner

Jeremy Downs is the Principal Scientist and Environmental Planner for the project 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 Pierce County Qualified Wetland Specialist and Fisheries Biologist, and he holds similar qualifications from other jurisdictions.



Jeremy Downs

01/15/2014

Date

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James H. Carsner, PWS, Senior Wetland Scientist

Jim Carsner, a certified Professional Wetland Scientist (#1461) and Fisheries Biologist with professional training and extensive experience in planning and design, project coordination, permitting and management, aquatic and wetland ecology, habitat restoration, wetland, stream, and benthic delineations and assessments, stream assessments, and mitigation planning and monitoring since 1979. Jim earned a Bachelor's of Science degree from the University of Washington, College of Fisheries and undertook post-graduate studies in wetland ecology at Portland State University.

Jim 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. He is also a Pierce County Qualified Wetland Specialist and Fisheries Biologist, and he holds similar qualifications from other jurisdictions.



James Carsner, PWS

01/15/2014

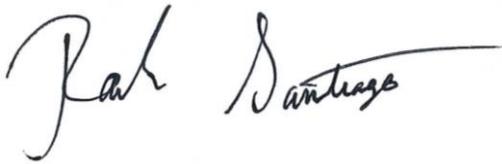
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Railin Santiago, Environmental Scientist

Railin Santiago is a professional Environmental Scientist with background in both freshwater and marine ecology. She has experience in fisheries management, assessing marine, shoreline, stream, and wetland systems, conducting biological evaluations, documentation and coordination of ESA, MSA, and NEPA compliance efforts, NPDES compliance, GIS mapping and analysis, and regulatory coordination and permitting. Railin earned a Bachelor's of Science degree from the Evergreen State College, Olympia and a Master's degree in Marine and Environmental Affairs from the University of Washington, Seattle.

In addition, she has received formal training in the National Environmental Policy Act (NEPA) from the National Marine Fisheries Service (NMFS), Geographic Information Systems (GIS) for Fisheries and Wildlife Biology Applications through the Northwest Environmental Training Center, Wetland Delineation Indicators and Problem Situations, and various NPDES Phase I and II stormwater monitoring and data analysis and regulatory subjects. For a list of representative projects, please contact her at Soundview Consultants LLC.



Railin Santiago

06/26/2015

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