Attachment 14

NE 4th Street/ 120th Avenue NE Corridor Project

Wetland and Stream Delineation Technical Report

prepared for
City of Bellevue

prepared by
Shannon & Wilson, Inc.

June 2011

Attachment 14

Table of Contents

Executive Summary S-1

1.0 Introduction 1-1

2.0 Methods 2-1

3.0 Document Review 3-1

4.0 Wetlands and Streams 4-1
- 4.1 Wetland A 4-1
- 4.2 Wetland B 4-4
- 4.3 Wetland C 4-7
- 4.4 Wetland D 4-10
- 4.5 West Tributary of Kelsey Creek 4-12
- 4.6 Uplands 4-13

5.0 Wetland Regulations 5-1
- 5.1 City of Bellevue 5-1
- 5.1.1 Wetlands 5-1
- 5.1.2 Streams 5-2
- 5.1.3 Habitat for Species of Local Importance 5-2
- 5.2 State Regulations 5-3
- 5.3 Federal Regulations 5-3

6.0 Conceptual Mitigation Opportunities 6-1
- 6.1 Project Impacts 6-1
- 6.2 Mitigation Requirements 6-1
- 6.3 Alternative Mitigation Strategies 6-2
- 6.3.1 Off-site and In-kind Mitigation 6-2
- 6.3.2 Mitigation Bank 6-3
- 6.3.3 In-Lieu Fee Program 6-3

7.0 Limitations 7-1

8.0 References 8-1

Appendix A—Wetland Delineation Methodology

Appendix B—USDA Soils Map and USFWS NWI Map

Appendix C—Wetland Field Data Sheets

Appendix D—Wetland Rating Form

Appendix E—Important Information About Your Wetland Delineation/ Mitigation and/or Stream Classification Report

Figures

Figure 1-1. Project Corridor Map 1-1
Figure 3-1. Fish Distribution Map 3-2
Figure 4-1. Wetland and Stream Delineation—Wetland. 4-2
Figure 4-2. Wetland and Stream Delineation – Wetland B 4-5
Figure 4-3. Wetland and Stream Delineation – Wetlands C and D 4-8

Tables

Table 4-1. Wetland A Summary 4-3
Table 4-2. Wetland B Summary 4-6
Table 4-3. Wetland C. Summary 4-9
Table 4-4. Wetland D Summary 4-11
Table 5-1. Wetland Classifications 5-1
Table 6-1. Preliminary Area of Unavoidable Impacts 6-1
Table 6-2. Required Replacement Ratios 6-2
Table 6-3. City of Bellevue Mitigation Requirements 6-2

Acronyms and Abbreviations

BCC	Bellevue City Code
City	City of Bellevue
CMP	corrugated metal pipe
Corps	U.S. Army Corps of Engineers
CWA	Clean Water Act
Ecology	Washington State Department of Ecology
I-405	Interstate 405
IRT	Interagency Review Team
NE	Northeast
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
NWP	Nationwide Permit
OHWM	ordinary high water mark
PB	Parsons Brinckerhoff
PEM/PSS	palustrine scrub-shrub wetland
PFOC	palustrine forested seasonally flooded
ROW	right-of-way
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
WDFW	Washington State Department of Fish and Wildlife
WSDOT	Washington State Department of Transportation
WRIA 8	Watershed Water Resource Inventory Area No. 8

This page intentionally left blank.

Executive Summary

A wetland and stream delineation was completed for the NE 4th/120th Avenue NE Corridor Project to identify aquatic areas protected under local, state, and federal regulations. Four wetlands (Wetlands A, B, C, and D) and one stream (West Tributary of Kelsey Creek) were identified and delineated within the project corridor. These wetlands and the stream are located in the northern third of the project corridor. No wetlands or streams were identified in the remainder of the corridor.

Based on Bellevue City Code, Wetlands A and B are both classified as Category III wetlands and require 60-foot standard buffers. Wetlands C and D are classified as Category II wetlands and require 110- and 75-foot standard buffers, respectively, due to differences in habitat scores. The West Tributary of Kelsey Creek provides suitable fish habitat and therefore would be classified as a Type F water. The creek requires a 50-foot standard buffer.

Based on the project's preliminary plans, unavoidable impacts would occur to Wetlands A, B, and C, and the West Tributary of Kelsey Creek. In total, 0.295 acre of unavoidable wetland impacts would occur and include completely filling Wetlands A and B. Additionally, approximately 15 linear feet of open-channel stream habitat in the West Tributary of Kelsey Creek would be impacted as a result of the project.

On-site and in-kind compensatory mitigation is not feasible in the project corridor due to the project limits and highly developed setting. Conceptual mitigation opportunities include off-site mitigation through off-site and in-kind mitigation, mitigation banking, or in-lieu fee program. Of these conceptual mitigation strategies, off-site and in-kind mitigation would be required by the City of Bellevue.

This page intentionally left blank.

1.0 Introduction

Shannon & Wilson, Inc. was contracted by Parsons Brinckerhoff (PB) to conduct a wetland and stream delineation along the NE 4th Street/120th Avenue NE project corridor in Bellevue, Washington (Figure 1-1). The NE 4th Street/120th Avenue NE project corridor is located in the Bel-Red Subarea of Bellevue, Washington.

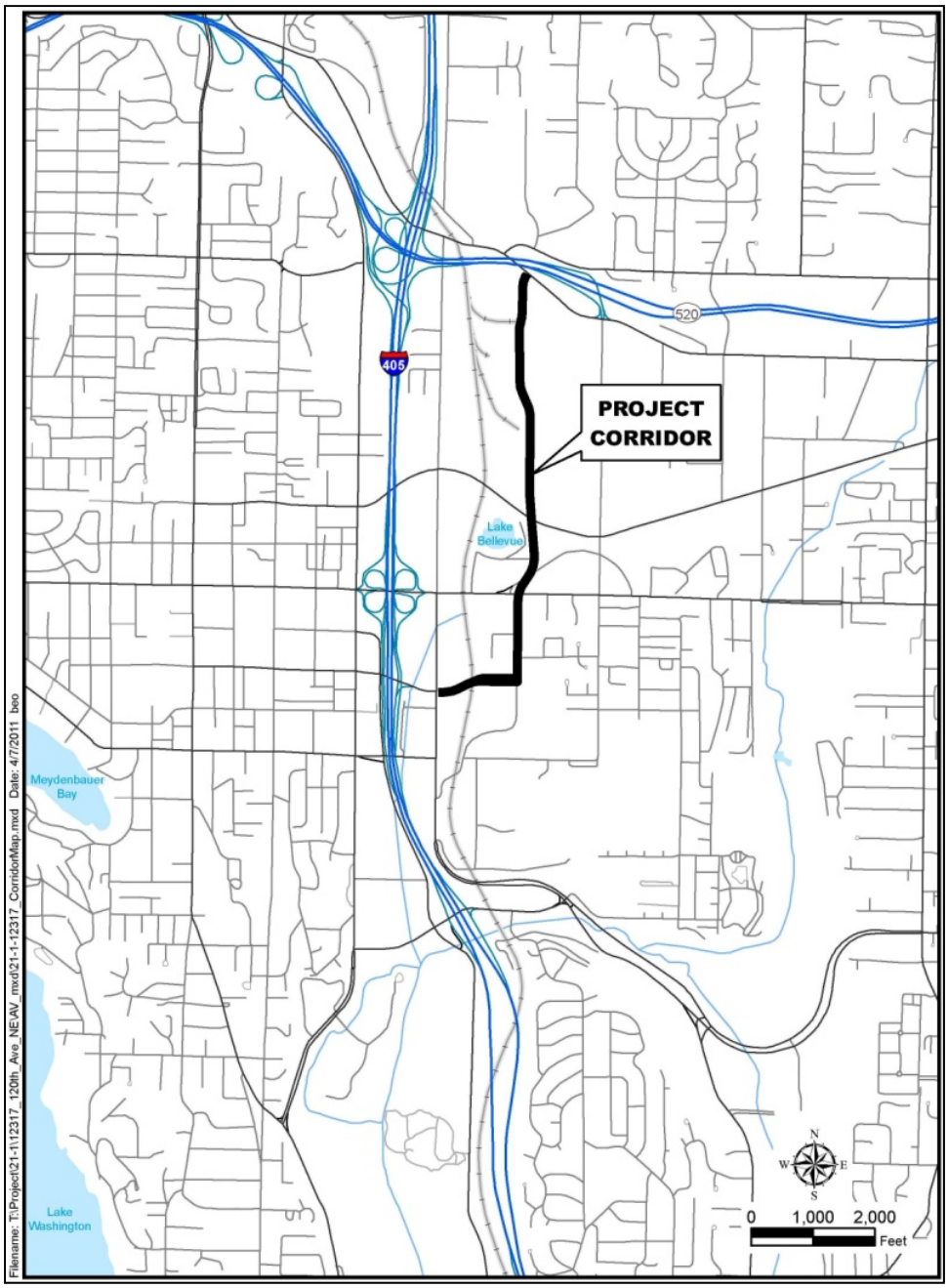


Figure 1-1. Project Corridor Map

The project corridor extends from the intersection of NE 4th Street with 116th Avenue NE eastward to 120th Avenue NE and then northward along 120th Avenue NE to Northup Way. The corridor is located along a topographic ridge, sloping to the north and south. The north subbasin is the headwaters of the West Tributary to Kelsey Creek, while the south subbasin is located in the Lake Bellevue and Sturtevant Creek basin. Both Kelsey Creek and Sturtevant Creek eventually drain to Lake Washington.

The project corridor is located within the Lake Washington/Cedar/Sammamish Watershed Water Resource Inventory Area No. 8 (WRIA 8) and Hydrologic Unit Code 17110012. The project corridor is located in the NW ¼ and SW ¼ of Section 28, Township 25 North, Range 5 East, Willamette Meridian.

The purpose of this wetland and stream delineation is to provide a determination of the extent, limits, and categories of wetlands associated with the NE 4th Street/120th Avenue NE project corridor for the preliminary design of proposed road improvements throughout the corridor.

2.0 Methods

Shannon & Wilson, Inc. conducted the wetland and stream delineation following a background review of information relating to the project corridor. This includes a review of the U.S. Department of Agriculture (USDA) Soil Survey for King County, U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) maps, City of Bellevue (City) critical areas maps, Washington State Department of Fish and Wildlife (WDFW) SalmonScape mapping system, and other relevant background information provided by PB.

The wetland and stream fieldwork was conducted on December 7, 2009, July 29, 2010, and March 8, 2011. Wetlands were delineated using the routine methodology described in the Washington State Department of Ecology's (Ecology's) 1997 *Washington State Wetland Identification and Delineation Manual*, the U.S. Army Corps of Engineers' (Corps') 1987 *Wetland Delineation Manual*, and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region Version 2.0* (May 2010). Appendix A includes a summarized description of methodology used.

Seven data plots (two upland, five wetland) were characterized within identified wetland and upland plant community types to help describe general conditions at the site. Information on vegetation, soils, and hydrology was collected at each data plot. These data plots were located near the upland/wetland interface to more accurately determine the boundaries of on-site wetlands or were located in areas that exhibited conditions similar to wetlands (i.e., drainage patterns and hydrophytic vegetation). Information gathered at these locations is provided in Appendix B.

Wetland areas were determined using the triple-parameter approach, which considers vegetation types, soil conditions, and hydrologic conditions. For an area to be considered wetland, it must display each of the following: (1) dominant plant species that are considered hydrophytic by the accepted classification indicators, (2) soils that are considered hydric under federal definition, and (3) indications of wetland hydrology, in accordance with federal definition. Please see Appendix A for more information and categorization of hydrophytic vegetation, hydric soils, and wetland hydrology.

Following their identification and delineation, wetlands within the project corridor were rated using Ecology's *Washington State Wetland Rating System for Western Washington*. This rating system has been adopted within the Bellevue City Code (BCC) and is used to determine the standard wetland buffer widths.

The ordinary high water mark of the West Tributary of Kelsey Creek was delineated for federal and state purposes following the guidance provided within *Determining the Ordinary High Water Mark on Streams in Washington State* and *Ordinary High Water Mark (OHWM) Identification* (Corps, 2005). All streams

identified and delineated were classified using the water typing system defined within BCC.

Identified wetlands were delineated by flagging the wetland boundaries with pink "wetland boundary" flagging. Wetlands were flagged in the field from north to south as Wetland A to Wetland D, but were later renamed so Wetland A was the southernmost wetland and Wetland D was the northernmost wetland. Ordinary high water mark (OHWM) and data point locations were flagged with orange flagging.

3.0 Document Review

Background information pertaining to the wetland site was collected and reviewed for its usefulness. These information sources included:

- USDA Natural Resources Conservation Service (NRCS) Web Soil Survey interactive mapping system (USDA, 2010);
- USFWS NWI Wetlands Mapper interactive mapping system;
- Known Freshwater Distribution of Salmon and Trout for WRIA 8;
- WDFW SalmonScape interactive mapping system;
- The City's West Tributary Basin and Sturtevant Creek Basin Maps; and
- BCC, Chapter 20.25H, Critical Areas Overlay District.

The USDA NRCS maps the project corridor as containing Norma sandy loam (No), Alderwood gravelly sandy loam (AgC), Urban Land (Ur), Bellingham silt loam (Bh), Tukwila muck (Tu), Seattle muck (Sk), and Everett gravelly sandy loam (EvC) (Figure B-1, Appendix B). Of these soil series, Seattle muck and Tukwila muck are identified as hydric soils.

According to the USFWS NWI, a palustrine scrub-shrub seasonally flooded wetland is west of the southern end of the project corridor, a palustrine unconsolidated bottom permanently flooded wetland is west of the central portion of the project corridor, and a palustrine forested seasonally flooded (PFOC) wetland is located along the northwest edge of the project corridor (Figure B-2, Appendix B).

The Known Freshwater Fish Distribution of Salmon and Trout for WRIA 8 maps are a series of maps and supporting tabular data of recent sightings for Chinook, coho, steelhead, sockeye, cutthroat trout, and kokanee species for the whole of WRIA 8. For Sturtevant Creek, these maps show that only coho occur in Sturtevant Creek from its mouth at Mercer Slough to Interstate 405 (I-405) (approximately 0.5 river mile downstream of the site). For the West Tributary of Kelsey Creek, these maps show that Chinook and cutthroat trout were observed up to NE Bel-Red Road (approximately 0.8 river mile downstream of the site) while coho and sockeye were observed up to NE 8th Street (approximately 1.1 river mile downstream of the site). Steelhead are not known to use the West Tributary of Kelsey Creek.

WDFW's SalmonScape interactive mapping system identifies coho presence south of where it crosses under I-405 (Figure 3-1). For the West Tributary of Kelsey Creek, SalmonScape identifies three partial fish passage barriers surveyed by WDFW on November 17, 2009. The partial barriers are located between NE 8th Street and NE Bel-Red Road: one culvert below NE 8th Street and two dams between NE 8th Street and NE Bel-Red Road. It is not specified whether these dams are natural (e.g., beaver or debris dams) or man-made dams.

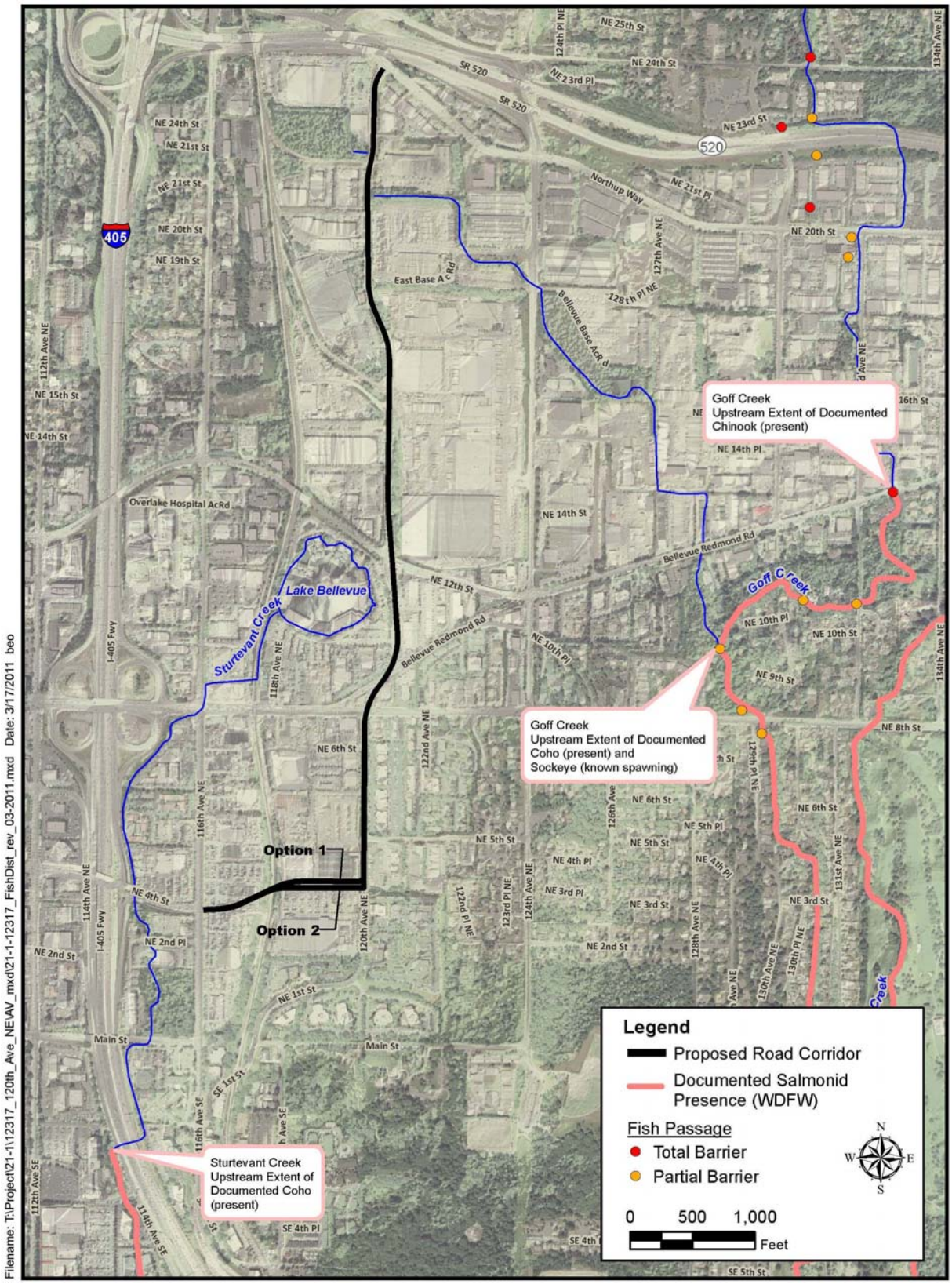


Figure 3-1. Fish Distribution Map

Based on the City's basin map for the Sturtevant Creek, the upper limits of Sturtevant Creek (Lake Bellevue to NE 2nd Place) barely exhibits any flow within its muddy and organic channel. However, the middle reach (I-405 to NE 2nd Place) exhibits substantial flow that is believed to be stormwater runoff and does not support fish or provide fish habitat. The downstream reach (mouth to I-405) historically contained coho and peamouth chub, according to City records. Coho were known to use the entire lower reach in 1975; however, field investigations in 2001 determined it was unlikely that coho continue to use the full lower reach. Lake Bellevue is known to support a non-native population of goldfish. Based on correspondence with the City, the muddy and organic channel within the upper limits of Sturtevant Creek has recently been cleaned out and provides improved flow.

According to the City's basin maps for the West Tributary Basin, the West Tributary of Kelsey Creek is used by sockeye, Chinook, and coho salmon as well as migratory and resident cutthroat trout. The upper limits of fish use appear to be at NE Bel-Red Road. Electrofishing occurred in 2001 and yielded no fish on either side of 124th Avenue NE and 120th Avenue NE. South of NE 8th Street, the West Tributary Basin map describes the stream as "a sequence of tiny pockets of water, each less than 2 inches deep."

This page intentionally left blank.

4.0 Wetlands and Streams

Four wetlands (Wetlands A to D) and one stream (West Tributary of Kelsey Creek) were located within the project corridor. Sturtevant Creek is located approximately 500 feet west of the project corridor and therefore is not discussed further in this report.

A summary of the wetlands and stream within the project corridor follows. Vegetation is described below by common name, with the scientific name and facultative indicator status in parentheses. Soils are described with the associated Munsell Color Charts color in parentheses. Appendix A includes vegetation indicator status definitions and Munsell Color Charts information. Appendix C includes the wetland field data sheets.

4.1 Wetland A

Wetland A (8,260 square feet [sf]) is located northeast of the intersection of 120th Avenue NE and NE 12th Street and is entirely within the project corridor (Figure 4-1). The Cowardin classification (Cowardin, 1979) for Wetland A is PEM/SS and its hydrogeomorphic classification (Brinson, 1993) is "depressional outflow."

Dominant vegetation within Wetland A includes Pacific willow (*Salix lasiandra,* FACW), Douglas spirea (*Spirea douglasii,* FACW) with an emergent strata of bentgrass (*Agrostis sp*., FAC).

Soils observed included a surface layer of black (10YR 2/1) muck above a layer of dark gray (2.5Y 4/1) clay loam exhibiting dark grayish-brown (10YR 4/2) redoximorphic concentrations. While the site is mapped as urban land (Ur), Tukwila muck (Tu) is mapped immediately west of Wetland A.

There appear to be three primary hydrologic sources for Wetland A: (1) a high groundwater table, (2) stormwater sheetflow off of 120th Avenue NE, and (3) discharge of surface flow out of a large, black plastic outfall structure in the middle of the wetland. We presume the black plastic outfall releases stormwater from the development upslope to the east of Wetland A. A roadside ditch is located within Wetland A, which originates from the black outfall structure, runs parallel to 120th Avenue NE, and terminates at a concrete culvert. Surface flow within Wetland A exits through this concrete culvert and is presumably conveyed through a series of underground pipes to Lake Bellevue.

Wetland A was classified as a Category III wetland using Ecology's Wetland Rating System (Ecology, 2004), see Appendix D.

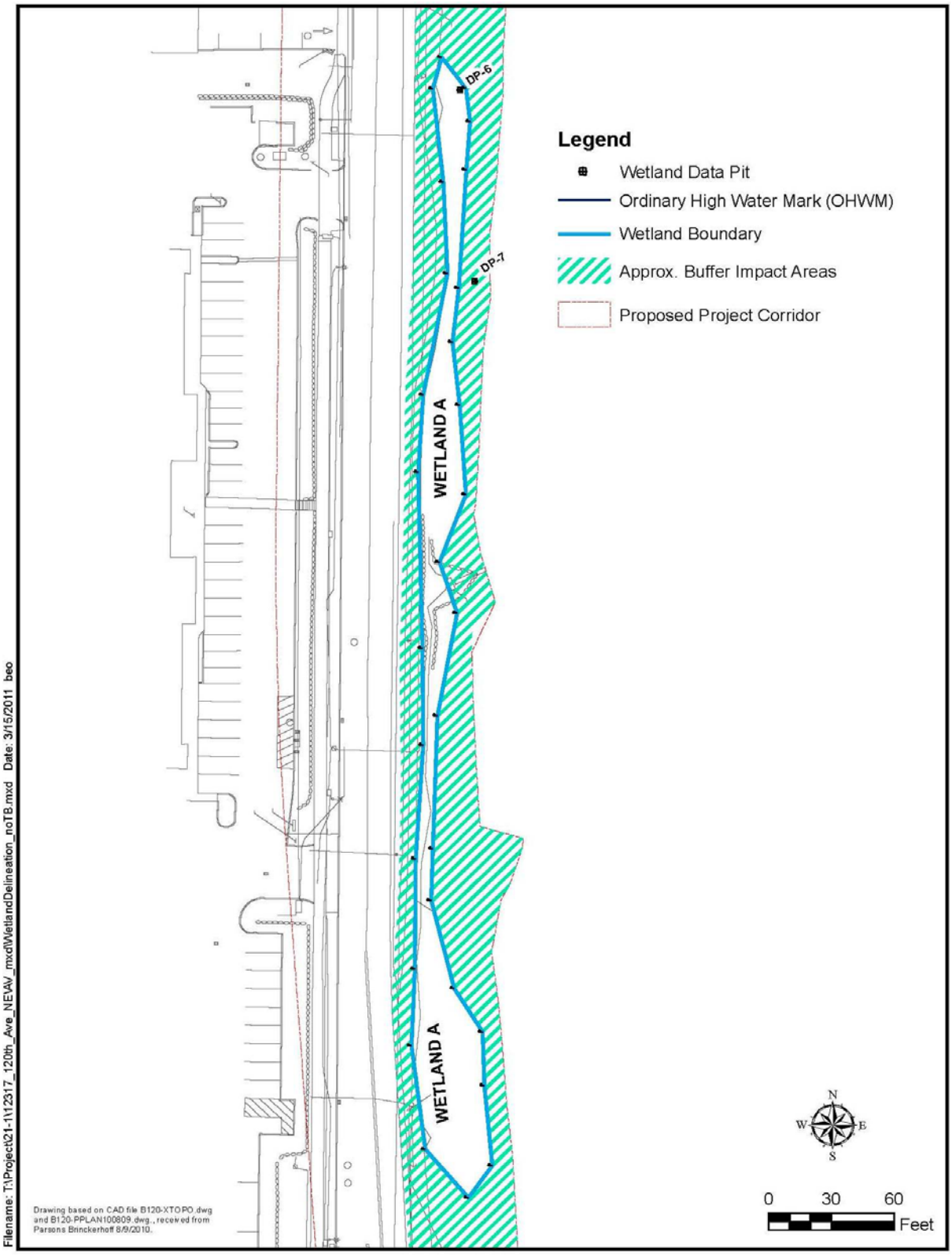


Figure 4-1. Wetland and Stream Delineation—Wetland.

The rationale for this rating was the wetland's:

- High water quality functions score (24 points) due to its organic soils, persistent vegetation, unconstructed surface outlet, and opportunity to remove pollutants;
- Low hydrologic functions score (8 points) due to the high dead storage during wet periods, the moderate ratio of the wetland's area to its basin, but lack of opportunity to reduce flooding downstream as the wetland drains to Lake Bellevue; and
- Moderate habitat functions score (14 points) due to its low diversity of vegetation, moderate interspersion of hydroperiods, and the presence of other nearby wetlands in the developed landscape. Additionally, a standing snag was observed in the southern end of Wetland A with evidence that it has been used by pileated woodpeckers for foraging.

Table 4-1. Wetland A Summary

NE 4th Street/120th Avenue NE Corridor Study - Wetland A Summary		
	Local Jurisdiction	City of Bellevue
	WRIA	#8 – Cedar/Sammamish
	Ecology Rating	Category III
	Bellevue Rating	Category III
	Cowardin Classification	Palustrine Emergent/ Palustrine Scrub shrub
	HGM Classification	Depressional Outflow
	Wetland Data Sheet	Data Point #6
Vegetation	Pacific willow (Salix lasiandra, FACW), Douglas spirea (Spirea douglasii, FACW) with an emergent strata of bentgrass (Agrostis sp., FAC).	
Soils	Mapped as urban land. Black (10YR 2/1) muck above a layer of dark gray (2.5Y 4/1) clay loam exhibiting dark grayish-brown (10YR 4/2) redoximorphic concentrations.	
Hydrology sources	• high groundwater table • stormwater sheetflow off of 120th Avenue NE • discharge of surface flow out of a large, black plastic outfall structure in the middle of the wetland	
Rationale for Delineation	Boundary closely follows change in topography, vegetation, soils, and hydrology.	
Ecology Rating	• High water quality functions score (24 points) • Low hydrologic functions score (8 points) • Moderate habitat functions score (14 points)	

The City has adopted Ecology's Wetland Rating System into the BCC, which requires Category III wetlands with habitat scores less than 20 points to maintain a 60-foot standard buffer.

4.2 Wetland B

Wetland B (4,420 sf) is located along an open roadside ditch east of 1899 120th Avenue NE and is entirely within the project corridor (Figure 4-2). The Cowardin classification (Cowardin, 1979) for Wetland B is PEM/SS and its hydrogeomorphic classification (Brinson, 1993) is "depressional outflow."

Dominant vegetation within Wetland B includes a scrub-shrub layer of Sitka willow (*Salix sitchensis,* FACW) and Douglas spirea (*Spirea douglasii,* FACW) with an emergent strata dominated by reed canarygrass (*Phalaris arundinacea*, FACW), small-fruited bulrush (*Scirpus microcarpus,* OBL), and soft rush (*Juncus effusus,* FACW).

Soil conditions within Wetland B exhibit evidence of being disturbed as a result of fill material placed for road construction and presumably from ongoing maintenance to the roadside ditch. Soils within the wetland were observed at two data plot locations. The first soil observation included a surface layer of very dark gray (10YR 3/1) sandy loam with road ballast and inclusions of greenish-gray (10Y 5/1) clay loam exhibiting light olive brown (2.5Y 5/1) redoximorphic concentrations. The second soil observation included a surface layer of black (5Y 2.5/1) loam with inclusions of very dark grayish-brown (10YR 3/2) loam exhibiting dark yellowish-brown (10YR 4/6) redoximorphic concentrations.

Hydrologic support for Wetland B is believed to be from stormwater sheetflow off of 120th Avenue NE resulting in saturation to the surface and occasional flooding for a minimum of 14 days during the growing season. Flow within Wetland B exits through a series of underground conveyances that direct stormwater to the West Tributary of Kelsey Creek.

Wetland B was classified as a Category III wetland using Ecology's Wetland Rating System (Appendix D). The rationale for this rating was the wetlands:

- Moderate water quality functions score (12 points) due to the persistent vegetation, unobstructed surface outlet, and opportunity to remove pollutants;
- Moderate hydrologic functions score (12 points) due to the moderate storage during wet periods, the moderate ratio of the wetland's area to its basin, and opportunity to reduce flooding downstream; and
- Low habitat functions score (8 points) due to its low diversity and interspersion of vegetation strata and hydroperiods as well as the presence of other nearby wetlands in the developed landscape.

The City requires Category III wetlands with habitat scores less than 20 points to maintain a 60-foot standard buffer.

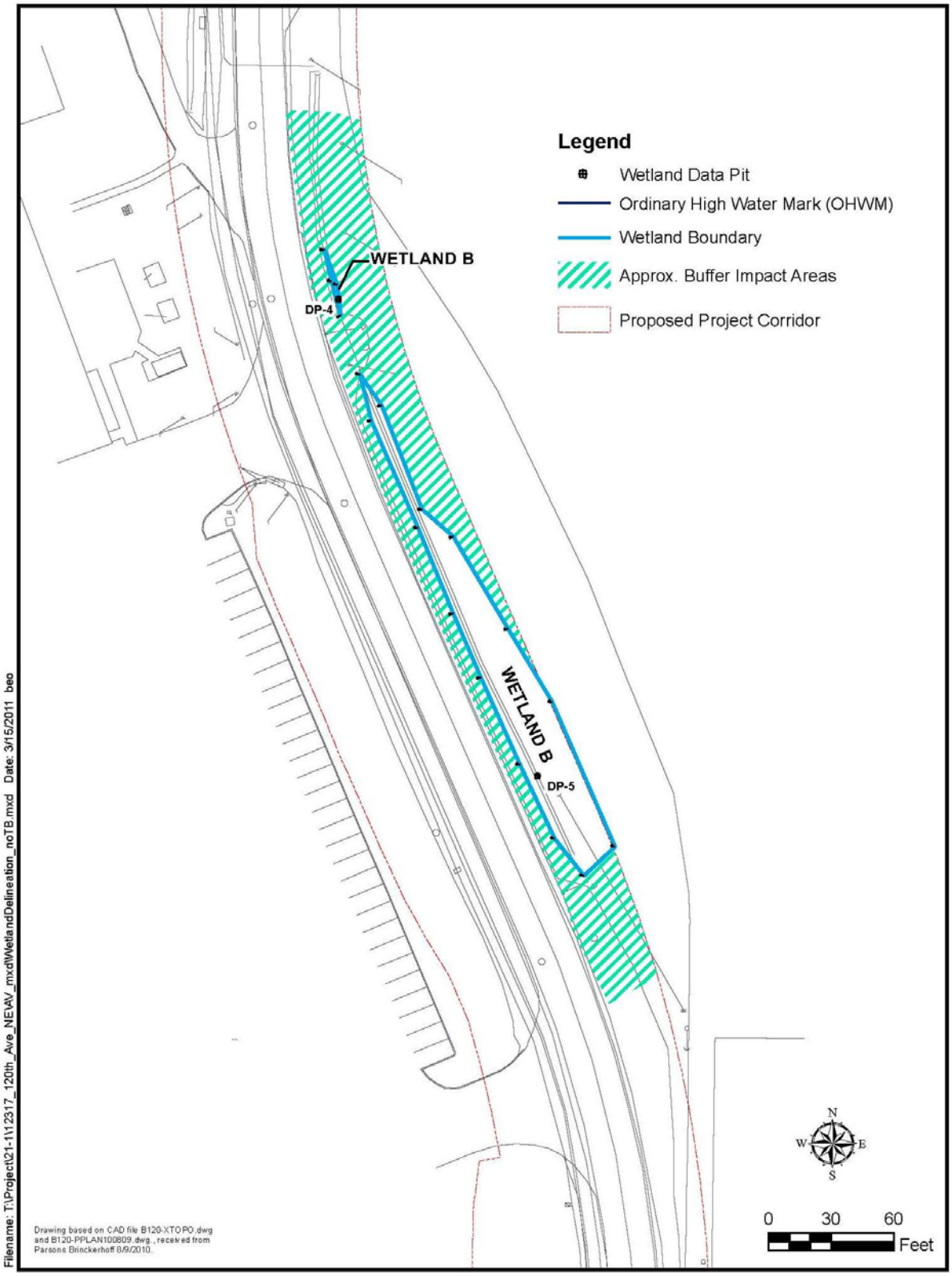


Figure 4-2. Wetland and Stream Delineation – Wetland B

Table 4-2. Wetland B Summary

NE 4th Street/120th Avenue NE Corridor Study - Wetland B Summary		
	Local Jurisdiction	City of Bellevue
	WRIA	#8 – Cedar/Sammamish
	Ecology Rating	Category III
	Bellevue Rating	Category III
	Cowardin Classification	Palustrine Emergent/ Palustrine Scrub shrub
	HGM Classification	Depressional Outflow
	Wetland Data Sheet	Data Point #4, #5
Vegetation	Sitka willow (Salix sitchensis, FACW) and Douglas spirea (Spirea douglasii, FACW) with an emergent strata dominated by reed canarygrass (Phalaris arundinacea, FACW), small-fruited bulrush (Scirpus microcarpus, OBL), and soft rush (Juncus effusus, FACW).	
Soils	• DP#4: very dark gray (10YR 3/1) sandy loam with road ballast and inclusions of greenish- gray (10Y 5/1) clay loam exhibiting light olive brown (2.5Y 5/1) redoximorphic concentrations • DP#5: black (5Y 2.5/1) loam with inclusions of very dark grayish-brown (10YR 3/2) loam exhibiting dark yellowish-brown (10YR 4/6) redoximorphic concentrations	
Hydrology sources	Stormwater sheetflow off of 120th Avenue NE resulting in saturation to the surface and occasional flooding for a minimum of 14 days during the growing season	
Rationale for Delineation	Boundary closely follows change in topography, vegetation, soils, and hydrology.	
Ecology Rating	• Moderate water quality functions score (12 points) • Moderate hydrologic functions score (12 points) • Low habitat functions score (8 points)	

4.3 Wetland C

Wetland C is a palustrine emergent, palustrine scrub-shrub wetland (PEM/PSS) located east of 2023 120th Avenue NE (Figure 4-3). This wetland is part of a larger wetland system that extends off site to the east and is approximately 2 acres in size. The Cowardin classification (Cowardin, 1979) for Wetland C is PEM/SS and its hydrogeomorphic classification (Brinson, 1993) is "riverine."

Dominant vegetation within that portion of the Wetland C located in the project corridor includes a scrub-shrub layer of Pacific willow (*Salix lasiandra,* FACW) and Douglas spirea (*Spirea douglasii,* FACW) above an emergent strata dominated by reed canarygrass (*Phalaris arundinacea*, FACW).

Soil conditions observed can be characterized by a surface layer of black (2.5Y 2.5/1) muck with inclusions of very dark greenish-gray (10Y 3/1) sand exhibiting dark yellowish-brown (10YR 4/6) streaking and coated sand grains. The muck soil corresponds to the Seattle muck soil series mapped by the NRCS Web Soil Survey.

Hydrologic support for Wetland C is dominated by the West Tributary of Kelsey Creek, which enters the wetland through a culvert at the northwest corner of Wetland C. While the creek flows through a defined channel as it enters Wetland C, its OHWM quickly fans out to encompass much of Wetland C, resulting in surficial sand deposits and drainage patterns through the wetland.

Wetland C was classified as a Category II wetland using Ecology's Wetland Rating System (Appendix D). The rationale for this rating was the wetland's:

- High water quality functions score (20 points) due the frequency of small depressions throughout the wetland unit, scrub-shrub cover, and opportunity to remove pollutants;
- High hydrologic functions score (26 points) due to the high ratio of flood plain to channel width, scrub-shrub and herbaceous cover, and opportunity to reduce flooding downstream,
- Moderate habitat functions score (16 points) due to its moderate diversity and interspersion of vegetation strata and hydroperiods as well as the presence of special habitat features and WDFW-defined priority habitats.

The City requires Category II wetlands with a habitat score of less than 20 points to maintain a 75-foot standard buffer.

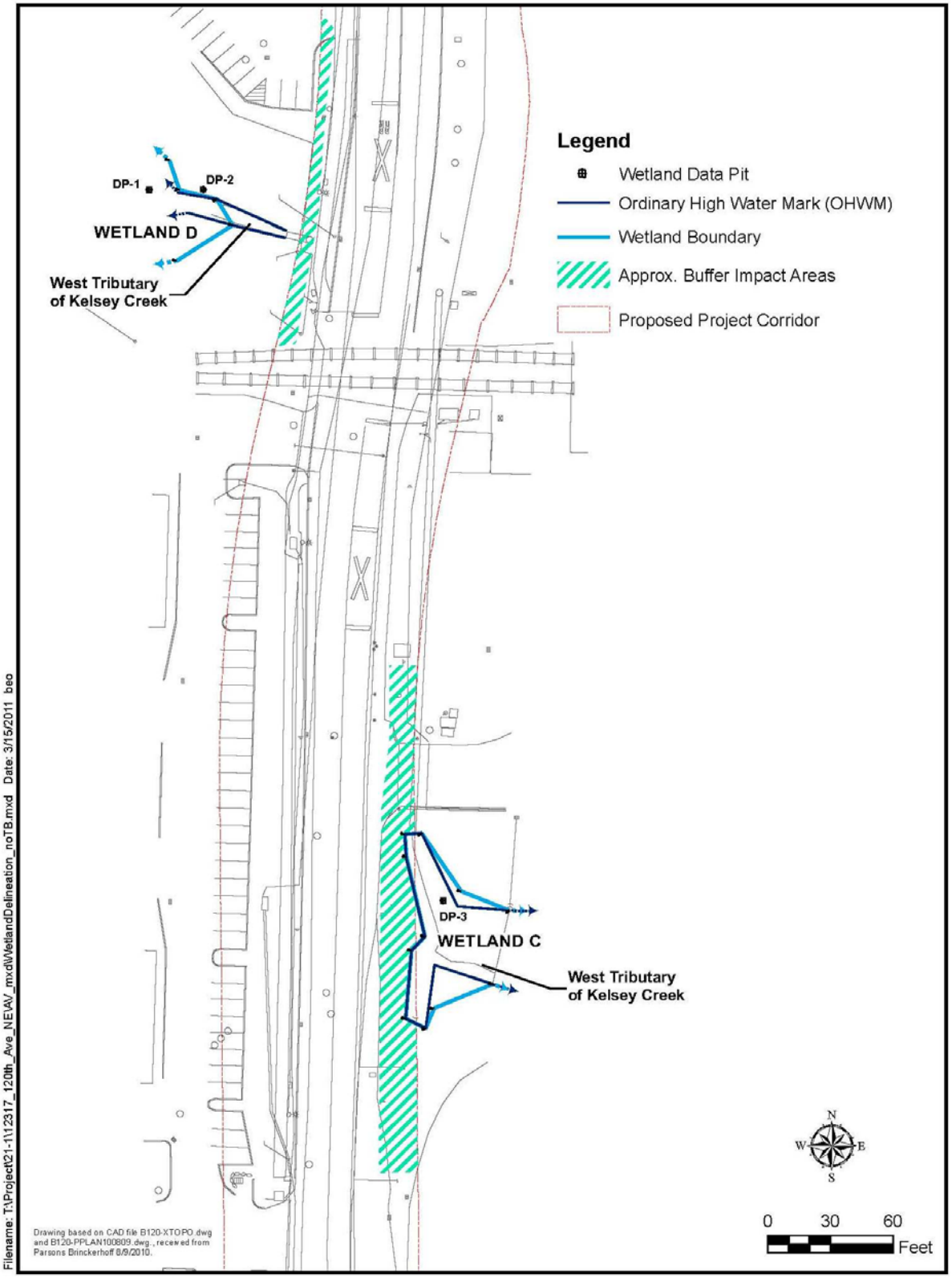


Figure 4-3. Wetland and Stream Delineation – Wetlands C and D

Table 4-3. Wetland C. Summary

NE 4th Street/120th Avenue NE Corridor Study - Wetland B Summary		
	Local Jurisdiction	City of Bellevue
	WRIA	#8 – Cedar/Sammamish
	Ecology Rating	Category II
	Bellevue Rating	Category II
	Cowardin Classification	Palustrine Emergent/ Palustrine Scrub shrub
	HGM Classification	Riverine
	Wetland Data Sheet	Data Point #3
Vegetation	Pacific willow (Salix lasiandra, FACW) and Douglas spirea (Spirea douglasii, FACW) above an emergent strata dominated by reed canarygrass (Phalaris arundinacea, FACW).	
Soils	Black (2.5Y 2.5/1) muck with inclusions of very dark greenish-gray (10Y 3/1) sand exhibiting dark yellowish-brown (10YR 4/6) streaking and coated sand grains.	
Hydrology sources	West Tributary of Kelsey Creek, which enters the wetland through a culvert at the northwest corner of Wetland C.	
Rationale for Delineation	Boundary closely follows change in topography, vegetation, soils, and hydrology.	
Ecology Rating	• High water quality functions score (20 points) • High hydrologic functions score (26 points) • Moderate habitat functions score (16 points)	

4.4 Wetland D

Wetland D is a located along the northwestern portion of the site, south of 2221 120th Avenue NE (Figure 4-3). This wetland is part of a larger wetland system that corresponds to the 4.9-acre PFOC wetland identified by the USFWS NWI. The Cowardin classification (Cowardin, 1979) for Wetland D is palustrine aquatic bed, emergent, scrub-shrub, forested wetland and its hydrogeomorphic classification (Brinson, 1993) is "depressional outflow."

Dominant vegetation within that portion of Wetland D located in the project corridor includes a forested canopy of Pacific willow (*Salix lasiandra,* FACW+) and black cottonwood (*Populus trichocarpa,* FAC) with a scrub-shrub layer of Pacific willow, black cottonwood, Sitka willow (*Salix sitchensis,* FACW), and Douglas spirea (*Spirea douglasii,* FACW) above an emergent strata dominated by small-fruited bulrush (*Scirpus microcarpus,* OBL), swordleaf rush (*Juncus ensifolius,* FACW), common cattail (*Typha latifolia,* OBL), hardstem bulrush (*Schoenoplectus acutus,* OBL), and soft rush (*Juncus effusus,* FACW).

Soil conditions observed can be characterized by a surface layer of black (10YR 2/1) muck, which corresponds to the Seattle muck soil series mapped by the NRCS Web Soil Survey.

Sources of hydrology supporting Wetland D are presumed to primarily be a high groundwater table sufficient to support the development of the organic soils and permanent flow within the West Tributary of Kelsey Creek, the headwaters of which are Wetland D. Stormwater may also contribute to wetland hydrology during precipitation events, as the site is surrounded by paved developments, however, no stormwater inlets into Wetland D were observed.

Wetland D was classified as a Category II wetland using Ecology's Wetland Rating System (Appendix D). The rationale for this rating was the wetland's:

- High score (20 points) for water quality functions due to its organic soils, persistent vegetation cover, and its opportunity to remove pollutants;
- Moderate score (16 points) for hydrologic functions due to its minimal depth of storage, the wetland's area relative to its basin, and its hydrologic position as the headwaters of the West Tributary of Kelsey Creek; and
- High score (24 points) for habitat functions due to its high diversity and interspersion of vegetation strata and hydroperiods, as well as the presence of special habitat features and WDFW-defined priority habitats.

The City requires Category II wetlands with a habitat score of between 20 and 28 points to maintain a 110-foot standard buffer.

Table 4-4. Wetland D Summary

NE 4th Street/120th Avenue NE Corridor Study - Wetland D Summary		
	Local Jurisdiction	City of Bellevue
	WRIA	#8 – Cedar/Sammamish
	Ecology Rating	Category II
	Bellevue Rating	Category II
	Cowardin Classification	Palustrine Aquatic/ Palustrine Emergent/ Palustrine Scrub shrub/ Palustrine Forested
	HGM Classification	Depressional Outflow
	Wetland Data Sheet	Data Point #1
Vegetation	Pacific willow (Salix lasiandra, FACW+) and black cottonwood (Populus trichocarpa, FAC) with a scrub-shrub layer of Pacific willow, black cottonwood, Sitka willow (Salix sitchensis, FACW), and Douglas spirea (Spirea douglasii, FACW) above an emergent strata dominated by small-fruited bulrush (Scirpus microcarpus, OBL), swordleaf rush (Juncus ensifolius, FACW), common cattail (Typha latifolia, OBL), hardstem bulrush (Schoenoplectus acutus, OBL), and soft rush (Juncus effusus, FACW).	
Soils	Black (10YR 2/1) muck.	
Hydrology sources	High groundwater table sufficient to support the development of the organic soils and permanent flow from the West Tributary of Kelsey Creek	
Rationale for Delineation	Boundary closely follows change in topography, vegetation, soils, and hydrology	
Ecology Rating	• High water quality functions score (20 points) • Moderate hydrologic functions score (16 points) • High habitat functions score (24 points)	

4.5 West Tributary of Kelsey Creek

The West Tributary of Kelsey Creek is the only stream located within the project corridor or its immediate vicinity. The on-site reach includes the stream's headwaters within Wetland D, where it gradually flows within a 5-foot-wide active channel with a bed comprised of 6 inches of silt before entering a 36-inch corrugated metal pipe (CMP) culvert under 120th Avenue NE (Figure 4-3). The stream daylights again within the project corridor approximately 260 feet downstream into a channel within Wetland C. The active channel in Wetland C is approximately 4 feet wide with a bed comprised of sand and well-rounded gravels. As the stream exits the 36-inch CMP under 120th Avenue NE, the OHWM for the stream quickly fans out above the banks of the active channel and encompasses much of Wetland C.

As the stream exits the project corridor, it flows through a riparian corridor highly confined and fragmented by developed warehouse and commercial properties on either side for approximately 0.6 river mile. Despite the confined riparian corridor, aerial photographs suggest this reach is densely vegetated by emergent and scrub-shrub species with trees scattered throughout. Habitat features such as downed large, woody debris are present.

Downstream of this upper reach, the stream enters a culvert where it is conveyed below ground for approximately 1,100 feet to the south of NE Bel-Red Road. As described in Section 3.0, fish species documented within the West Tributary of Kelsey Creek includes Chinook, coho, sockeye, and cutthroat trout. The upper limit of presence is the downstream end of this long culvert daylighting at NE Bel-Red Road.

Downstream of its crossing under NE Bel-Red Road, the West Tributary of Kelsey Creek joins Goff Creek, which is tributary to Kelsey Creek. Goff Creek eventually connects to Kelsey Creek, which drains through Mercer Slough and into Lake Washington.

According to the BCC, streams that support fish or fish habitat are identified as Type F waters. Those that do not support fish or fish habitat are identified as Type N waters. While the on-site reach of the West Tributary of Kelsey Creek does not support fish, it may provide fish habitat if they could access it. The BCC specifically calls out all daylighted sections of the West Tributary of Kelsey Creek as requiring 50-foot standard buffers, which is the same as required for all Type N waters. However, as the stream provides suitable fish habitat to species that may become present when downstream barriers are removed, we believe this tributary should be classified as a Type F water.

4.6 Uplands

The uplands throughout the project corridor are zoned as commercial, office, and multi-family and are largely built out as commercial warehouses, office buildings, and associated parking.

A small, triangular stormwater pond was identified offsite, but within 200 feet of the project corridor and on the northeast corner of 1899 120th Avenue NE. While this stormwater pond appeared to satisfy all three wetland criteria, the City does not consider, "… *those artificial wetlands intentionally created from nonwetland sites, including, but not limited to, irrigation and drainage ditches, grass-lined swales, canals, detention facilities…*" (BCC 20.25H.095) to be jurisdictional wetlands.

Where patches of upland vegetation occur, vegetation includes landscaped uplands associated with development and disturbed vegetative communities along the roadside. These areas are dominated by black cottonwood (Populus trichocarpa, FAC), Pacific madrona (*Arbutus menziesii*, NI), red alder (*Alnus rubra*, FAC), Indian plum (*Oemelaria cerasiformis*, FACU) Douglas spirea (*Spirea douglasii*, FACW), black hawthorn (*Crataegus douglasii*, FAC), Himalayan blackberry (*Rubus armeniacus*, FACU), and creeping blackberry (*Rubus ursinus*, FACU).

Soils observed throughout the uplands include very dark brown (10YR 2/2) and dark grayish-brown (10YR 4/2) loam lacking redoximorphic features.

This page intentionally left blank.

5.0 Wetland Regulations

Several federal, state, and local regulations apply to development proposals in and/or near wetlands. A summary of applicable regulatory implications is given below.

5.1 City of Bellevue

The City regulates impacts to wetlands and streams under Section 20.25H (Critical Areas Overlay District) of the BCC.

5.1.1 Wetlands

Wetlands within the project corridor were rated using Ecology's Wetland Rating System, which the City has adopted. These wetlands ratings and their required standard buffers are summarized in Table 5-1 below.

Table 5-1. Wetland Classifications

Wetland	Wetland Classification		Wetland Size (acre)	Buffer Width (feet)
	Ecology/Bellevue Rating System	Habitat Score		
A	III	14	0.19	60
B	III	8	0.10	60
C	II	16	~1.5	75
D	II	24	~5	110

Where the standard buffer for Wetlands A to D meets the edge of the existing 120th Avenue NE improved right-of-way (ROW) or other legally established linear transportation ROWs, the standard buffer width for each wetland terminates. Therefore, buffer impacts associated with the project would only include those areas of existing or new unimproved ROW impacted from the proposed road widening project.

Buffer modification may occur through buffer averaging, which allows a wetland buffer to be reduced down to 75 percent of its standard width provided the total buffer area does not decrease and does not have an adverse effect on the ecological function or structure of the buffer. Unavoidable impacts to wetland buffers require compensatory mitigation.

Modification to wetlands is allowed where avoidance and minimization measures cannot avoid impacts for "*new or expanded public right-of-way, private roads, access easements and driveways*" as well as "*new or expanded bridges and culverts*" under BCC 20.25H.055B. However, compensatory wetland mitigation for impacts must occur. In the event that mitigation can occur on-site and in-kind, the

compensatory mitigation would be required to comply with the City's replacement ratios, as summarized in Table 6-2.

While mitigation on-site and in-kind is the City's preference, followed by in-kind and the same drainage basin, the City would allow off-site mitigation when there is: (1) no reasonable alternative, (2) it has a greater likelihood of providing those functions impacted, and (3) it occurs within the same drainage basin.

5.1.2 Streams

Open channel reaches of the West Tributary of Kelsey Creek are specifically called out under BCC 20.25H.075.C.1.c as requiring a standard buffer width of 50 feet. This is the same buffer width as Type N waters.

Stream buffers are regulated under the BCC similarly to wetlands, where the edge of the improved ROW defines the limits of the buffer. Buffer modification may occur through buffer averaging. Unavoidable impacts to stream buffers require compensatory mitigation.

Modification to streams may also occur where avoidance and minimization measures cannot avoid impacts for "*new or expanded public right-of-way, private roads, access easements and driveways*." While compensatory mitigation is required for impacts to streams, there are no prescriptive replacement ratios.

5.1.3 Habitat for Species of Local Importance

Under BCC 20.25H.150A, the City has designated the pileated woodpecker (*Dryocopus pileatus*), among others, as a species of local importance. Therefore, habitat associated with pileated woodpeckers is identified as a critical area. Projects that have unavoidable impacts to habitats associated with local species of importance are required to implement the management recommendations developed by WDFW for that species.

Snags and large woody debris were observed in Wetlands A, C, and D during the wetland and stream delineation. This includes a snag used for foraging in Wetland A. As the project would permanently impact all of Wetland A and that snag providing pileated woodpecker forage habitat, the management recommendations for pileated woodpeckers would need to occur.

Habitat recommendations were last updated by WDFW for pileated woodpecker in 2004 (WDFW, 2004). While there are no prescriptive mitigation requirements as part of these management recommendations, mitigation associated with impacting the pileated woodpecker forage snag would likely include the installation of habitat features (e.g., snags and/or large woody debris) into the design of any compensatory wetland and stream mitigation. However, specific requirements necessary for mitigating pileated woodpecker habitat would be subject to the City's review and approval.

5.2 State Regulations

Ecology has been authorized to implement Section 401 of the Clean Water Act (CWA) for Water Quality Certification in Washington for most projects that require the Corps permits under CWA Section 404 (see Section 5.3). The purpose of the certification process is to ensure that federally permitted activities comply with the federal CWA, state water quality laws, and any other applicable state laws. Some general requirements for Section 401, if it is required, include pollution spill prevention and response measures, disposal of excavated or dredged material in upland areas, use of fill material that does not compromise water quality, clear identification of construction boundaries, and provision for site access to the permitting agency for inspection.

5.3 Federal Regulations

The Corps' CWA Section 404 review process is required for projects involving discharges of dredges or fill materials into the waters of the United States, including non-isolated wetlands and streams. Given that the aquatic areas that may be impacted by the project drain to Lake Washington, the Corps would likely regulate impact to these wetlands and stream under Section 404.

Any proposed impact located within a jurisdictional wetland would require a Nationwide permit (NWP) or an Individual permit from the Corps. Given the project description, impacts to the wetlands and stream may qualify for a NWP 14 for Linear Transportation Projects, provided the project does not exceed one-half acre of fill in waters of the United States.

This page intentionally left blank.

6.0 Conceptual Mitigation Opportunities

6.1 Project Impacts

The preliminary plans provided for the project show unavoidable wetland impacts to all of Wetlands A and B, and portions of Wetland C and the West Tributary of Kelsey Creek. These impacts are summarized in Table 6-1.

Table 6-1. Preliminary Area of Unavoidable Impacts

Name	Area of Wetland and Stream Impact		Area of Buffer Impacts	
	Square Feet	Acre	Square Feet	Acre
Wetland A	8,260	0.19	20,693	0.48
Wetland B	4,420	0.10	10,375	0.24
Wetland C and West Tributary of Kelsey Creek	206	0.005	3,702	0.08
Wetland D	0	0	940	0.02
Total	**12,886**	**0.295**	**35,710**	**0.82**

6.2 Mitigation Requirements

The City requires that compensatory mitigation occur for wetland impacts following prescriptive replacement ratios for on-site and in-kind mitigation. Additionally, as part of the Section 401 and 404 review process, Ecology and the Corps would require that compensatory mitigation occur. In 2006, the Corps, Ecology, and the U.S. Environmental Protection Agency developed a joint guidance document for compensatory mitigation in Washington State (Ecology, 2006). These guidelines provide recommended replacement ratios for on-site and in-kind mitigation. The replacement ratios are summarized in Table 6-2 below.

While unavoidable stream impacts also require compensatory mitigation, neither the City nor the joint guidance document provide prescriptive stream replacement ratios. However, in addition to the compensatory mitigation for both wetland and stream impacts, the City also requires mitigation for buffers at a minimum of 1:1. Table 6-3 summarizes the wetland and buffer mitigation that would be required by the City.

Table 6-2. Required Replacement Ratios

Wetland	Category	Wetland Replacement Ratios1					
		Bellevue	Corps/Ecology				
		R/C	R/C	RH	R/C and RH	R/C and E	E
A	III	2:1	2:1	4:1	1:1 R/C + 2:1 RH	1:1 R/C + 4:1 E	8:1
B	III	2:1	2:1	4:1	1:1 R/C + 2:1 RH	1:1 R/C + 4:1 E	8:1
C	II	3:1	3:1	6:1	1:1 R/C + 4:1 RH	1:1 R/C + 8:1 E	12:1
D	II	3:1	3:1	6:1	1:1 R/C + 4:1 RH	1:1 R/C + 8:1 E	12:1

Wetland Replacement Ratios Source: Wetland Mitigation in Washington State – Part 1: Agency Policies and Guidance (Version 1) (Ecology, 2006)
[1]Replacement ratios are for on-site and in-kind mitigation only. Replacement ratios reflect area of required mitigation to the area of wetland impact.
Corps = U.S. Army Corps of Engineers; E = Wetland Enhancement; Ecology = Washington State Department of Ecology; R/C = Wetland Re-establishment or Creation; RH = Wetland Rehabilitation

Table 6-3. City of Bellevue Mitigation Requirements

Name	Area of Impact (square feet)	City of Bellevue Mitigation Ratios	Area of Mitigation (square feet)
Lake Bellevue/Sturtevant Creek Subbasin			
Wetland A	8,260	2:1	16,520
Wetland A Buffer	20,693	1:1	20,693
West Tributary of Kelsey Creek Subbasin			
Wetland B	4,420	2:1	8,840
Wetland B Buffer	10,375	1:1	10,375
Wetland C	206	3:1	618
Wetland C Buffer	3,702	1:1	3,702
Wetland D Buffer	940	1:1	940

City of Bellevue Mitigation Ratios Source: Bellevue City Code Chapter 20.25H. Critical Area Overlay District (City of Bellevue, 2010a)

The highly developed nature and narrowness of the project corridor would likely preclude on-site mitigation. Therefore, off-site and in-kind mitigation or off-site and out-of-kind mitigation options would likely need to be pursued.

From our preliminary review of alternative off-site mitigation strategies, there are three potential options: (1) off-site an in-kind mitigation at a nearby site, (2) mitigation bank, or (3) in-lieu fee program. These alternative mitigation strategies are described more fully in Section 6.3.

6.3 Alternative Mitigation Strategies

6.3.1 Off-site and In-kind Mitigation

According to Kit Paulsen with the City, as summarized by PB through e-mails, wetland mitigation would be required to be performed in the subbasin where impacts occur. Therefore, mitigation for impacts to Wetland A must occur in the

Lake Bellevue/Sturtevant Creek subbasin and impacts to Wetlands B and C must occur in the West Tributary of Kelsey Creek subbasin.

A potential off-site location within the Lake Bellevue/Sturtevant Creek subbasin has not been identified. Mitigation requirements would be the same as those shown in Table 6-3.

Based on discussions between Peter Masson of PB and the City's Urban Design and Land Use staff on August 3, 2010, the City has purchased three parcels comprising approximately 7 acres near the intersection of 14th Street NE and 124th Avenue NE. This site is approximately 0.3 mile from the site and is located in the West Tributary of Kelsey Creek basin. The City-owned parcels include a piped portion of the West Tributary of Kelsey Creek where mitigation for stream impacts may be able to be accomplished as well. Mitigation requirements would be the same as those shown in Table 6-3.

Off-site and in-kind mitigation at a nearby site within the project area subbasins is the most likely option to be accepted by the City, Ecology, and Corps. Other alternative mitigation strategies exist if this strategy is not approved or proves cost prohibitive.

6.3.2 Mitigation Bank

There is currently no approved mitigation bank whose service area includes the project site. However, it may be possible to justify to the City and Interagency Review Team (IRT) the use of credits from a nearby mitigation bank for the project's impacts. If this occurs, the bank most likely to be accepted by the IRT, as it serves a portion of WRIA 8, is the Springbrook Creek Mitigation Bank operated by the Washington State Department of Transportation (WSDOT) in Renton, Washington. If WSDOT does not allow credits to be sold for Local Highways and Programs-sponsored projects, other mitigation banks in the area may be sought.

Justifying the use of mitigation banks outside of their service area may be difficult if other options are available.

6.3.3 In-Lieu Fee Program

Three in-lieu fee programs are currently seeking approval from the IRT. One of these programs is sponsored by King County and is currently awaiting final certification. When this program is approved it would allow projects to mitigate for impacts through a fee, where on-site and in-kind mitigation is not feasible and an approved mitigation bank is not currently available. The fee for such mitigation would be used by King County to construct large mitigation projects at predetermined locations.

In the event that off-site and in-kind mitigation is not possible, in-lieu fee may be the next best alternative if it has been approved.

This page intentionally left blank.

7.0 Limitations

The findings and conclusions documented in this report have been prepared for specific application to this project, and have been developed in a manner consistent with that level of care and skill normally exercised by members of the environmental science profession currently practicing under similar conditions in the area. The conclusions and recommendations presented in this report are professional opinions based on interpretation of information currently available to us and are made within the operational scope, budget, and schedule constraints of this project. No warranty, express or implied, is made. We have prepared the document, "Important Information About Your Wetland Delineation/Mitigation Report and/or Stream Assessment" (Appendix E) to assist you and others in understanding the use and limitations of our reports.

Wetland boundaries identified by Shannon & Wilson are considered to be preliminary until the Corps and/or the local jurisdictional agency validates the flagged wetland boundaries. Validation of the wetland boundary by the regulating agency(s) provides a certification, usually written, that the wetland boundaries verified are the boundaries that would be regulated by the agency(s) until specified data or until the regulations are modified. Only the regulating agency(s) can provide this certification.

Since wetlands are dynamic communities affected by both natural and human activities, changes in wetland boundaries may be expected; therefore, wetland delineations cannot remain valid for an indefinite period. The Corps typically recognizes the validity of wetland delineations for a period of five years after completion. Development activities on a site five years after the completion of this wetland delineation report may require revision of the wetland delineation. In addition, changes in government code, regulations, or laws may occur. Because of such changes beyond our control, our observations and conclusions regarding this site may need to be revised wholly or in part.

This page intentionally left blank.

8.0 References

Brinson 1993 — M. M. Brinson (Brinson). 1993. U. S. Army Corps of Engineers Waterways Experiment Station Wetlands Research Program Technical Report WRP-DE-4. *A Hydrogeomorphic Classification for Wetlands.*

Bellevue 2010a — City of Bellevue (Bellevue). 2010. Bellevue City Code Chapter 20.25H. *Critical Area Overlay District.*

Bellevue 2010b — City of Bellevue (Bellevue). 2010. http://www.bellevuewa.gov/drainage_basin_maps.htm. *Drainage Basin Maps.*

Cowardin 1979 — L. M. Cowardin, Virginia Carter, F. C. Golet, and E. T. LaRoe (Cowardin). 1979. U. S. Fish and Wildlife Service Report FWS/OBS-79/31. *Classification of Wetlands and Deepwater Habitats of the United States.*

Corps 1987 — U. S. Army Corps of Engineers (Corps). 1987. U. S. Corps of Engineers Waterways Experiment Station Technical Report Y-87-1. *Corps of Engineers Wetlands Delineation Manual.*

Corps 2005 — U. S. Army Corps of Engineers (Corps). December 7, 2005. Regulatory Guidance Letter no. 05-05. *Ordinary High Water Mark Delineation.*

Corps 2010 — U. S. Army Corps of Engineers (Corps). 2010. U. S. Army Corps of Engineers Engineer Research and Development Center Technical Report TR-10-3. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0).*

Ecology 1997 — Washington State Department of Ecology. (Ecology). 1997. Publication no. 96-94. *Washington State Wetlands Identification and Delineation Manual.*

Ecology 2004 — Washington State Department of Ecology. (Ecology). 2004. Publication no. 04-06-025. *Washington State Wetland Rating System, Western Washington, Second Edition.*

Ecology 2006 — Washington State Department of Ecology, U. S. Army Corps of Engineers Seattle District, and U. S. Environmental Protection Agency Region 10. (Ecology). March 2006. Publication no. 06-06-011a. *Wetland Mitigation in Washington State – Part 1: Agency Policies and Guidance (Version 1).*

Olson 2010 — P. Olson and E. Stockdale (Olson). 2010. Washington State Department of Ecology Publication 08-06-001. *Determining the Ordinary High Water Mark on Streams in Washington State.*

USDA 2010 — U. S. Department of Agriculture Natural Resources Conservation Service (USDA). 2010. http://websoilsurvey.nrcs.usda.gov/app/. *Web Soil Survey Mapping System.*

USFWS 1988 and 1993 — U. S. Fish and Wildlife Service (USFWS). 1988 & 1993. Biological Report 88 (26.9). *National List of Plant Species that Occur in Wetlands, Northwest (Region 9).*

USFWS 2010 U. S. Fish and Wildlife Service (USFWS). 2010. http://www.fws.gov/wetlands/data/Mapper.html. *National Wetland Inventory Mapping System.*

WDFW 2004 Washington State Department of Fish and Wildlife. (WDFW). 2004. *Management Recommendations for Washington's Priority Species, Volume 4: Birds*

Appendix A
Wetland Delineation Methodology

This page intentionally left blank.

APPENDIX A

WETLAND DELINEATION METHODOLOGY

TABLE OF CONTENTS

Page

A.1 WETLAND VEGETATION 1

A.2 HYDRIC SOILS 3

A.3 WETLAND HYDROLOGY 4

A.4 DISCLAIMER 4

A.5 REFERENCES 5

TABLE

A-1 Definitions of Plant Indicator Status A-2

APPENDIX A

WETLAND DELINEATION METHODOLOGY

The triple-parameter approach, as required in the Washington State Department of Ecology's (Ecology's) 1997 *Washington State Wetlands Identification and Delineation Manual*, the United States Army Corps of Engineers' (the Corps') 1987 *Corps of Engineers Wetland Delineation Manual*, and the Corps' 2010 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0)* was used to identify and delineate the wetlands on the site described in this report. The triple-parameter approach requires that vegetation, soils, and hydrology are each evaluated to determine the presence or absence of wetlands. An area is considered to be a wetland if each of the following is met: (a) dominant hydrophytic vegetation is present in the area, (b) the soils in the area are hydric, and (c) the necessary hydrologic conditions within the area are met.

A determination of wetland presence was made by conducting a Routine Delineation. Corresponding upland and wetland plots were recorded to characterize surface and subsurface conditions and more accurately determine the boundaries of on-site wetlands.

A.1 WETLAND VEGETATION

Hydrophytic plants are plant species specially adapted for saturated and/or anaerobic conditions. These species can be found in areas where there is a significant duration and frequency of inundation, which produces permanently or periodically saturated soils. Hydrophytic species, due to morphological, physiological, and reproductive adaptations, have the ability to grow, effectively compete, reproduce, and thrive in anaerobic soil. Indicators of hydrophytic vegetation are based on the wetland indicator status of plant species on the wetland plant list (Reed 1988; 1993) (supplement for Region 9); or current approved lists). Plants are categorized as Obligate (OBL), Facultative Wetland (FACW), Facultative (FAC), Facultative Upland (FACU), or Upland (UPL). Species in the facultative categories (FACW, FAC, and FACU) are recognized as occurring in both wetlands and non-wetlands to varying degrees. Most wetlands are dominated mainly by species rated as OBL, FACW, or FAC (Table A-1).

TABLE A-1
DEFINITIONS OF PLANT INDICATOR STATUS

Plant Indicator Status Categories
Obligate Wetland Plants (**OBL**) – Plants that occur in wetlands, under natural conditions, approximately 99 percent of the time.
Facultative Wetland Plants (**FACW**) – Plants that occur in wetlands approximately 67 to 99 percent of the time.
Facultative (**FAC**) – Plants that are as likely to be found in wetlands as in non-wetlands, approximately 34 to 66 percent of the time in either.
Facultative Upland Plants (**FACU**) – Plants that occur in non-wetlands approximately 1 to 33 percent of the time.
Obligate Upland Plants (**UPL**) – Plants that occur in non-wetlands, under natural conditions, approximately 99 percent of the time.
No Indicator (**NI**) and No Occurrence (**NO**) – Plants that have either been reviewed but not given an indicator status (NI) or have no known occurrence (NO) in the region. Plants listed as NI and NO can be assigned the indicator status of that plant species from the nearest adjacent region.

Source: National List of Plant Species that Occur in Wetlands: Northwest (Region 9). U.S. Fish and Wildlife Service Biological Report 88(26.9). (Revised 1993)

The approximate percentage of absolute aereal cover for each of the different plant species occurring within the tree, shrub, herbaceous, and woody vine strata was determined. Trees within a 30-foot radius, shrubs within a 15-foot radius, and herbaceous and woody vine species within a 5-foot radius of each data point were identified and noted. However, where site conditions merited it, the dimensions of the tree, shrub, and herbaceous/woody vine strata were modified.

The dominance test is the primary hydrophytic vegetation indicator and it is used in all wetland delineations. Dominant plant species are considered to be those that, when cumulatively totaled in descending order of absolute cover, exceed 50 percent of the total absolute cover for each vegetative stratum. Any additional species individually representing 20 percent or greater of the total absolute cover for each vegetative strata are also considered dominant. Hydrophytic vegetation is considered to be present when greater than 50 percent of the dominant plant species within the area had an indicator status of OBL, FACW, or FAC.

If a plant community does not meet the dominance test in areas where hydric soils and wetland hydrology are present, vegetation is reevaluated using the prevalence index, plant morphological adaptations for living in wetlands, and/or abundance of bryophytes (e.g., mosses) adapted to living in wetlands. The prevalence index is a weighted average that takes into account the abundance of all plant species within the sampling area to determine if hydrophytic vegetation is more or less prevalent. Using the prevalence index, all plants within the sampling area are grouped by wetland indicator status and absolute cover is summed for each group. Total cover for each indicator status group is weighted by the following multipliers: OBL=1, FACW=2,

FAC=3, FACU=4, UPL=5. The prevalence index is calculated by dividing the sum of the weighted totals by the sum of total cover in the sampling area. A prevalence index of 3.0 or less indicates that hydrophytic vegetation is present.

A.2 HYDRIC SOILS

Hydric soils are defined as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (USDA SCS, 1994). Repeated periods of saturation and inundation for more than a few days, in combination with soil microbial activity, causes depletion in oxygen (anaerobic conditions) and results in delayed decomposition of organic matter and reduction of iron, manganese, and sulfur elements. As a result of these processes, most hydric soils develop distinctive characteristics observable in the field during both wet and dry periods. (USDA NRCS, 2010). These characteristics may be exhibited as an accumulation of organic matter; bluish-gray, green-gray, or low chroma and high value soil colors; mottling or other concentrations of iron and manganese; and/or hydrogen sulfide odor similar to a rotten egg smell.

The USDA Natural Resources Conservation Service (NRCS) has developed official hydric soil indicators as summarized in *Field Indicators of Hydric Soils in the United States* (USDA NRCS, 2010). These indicators were developed to assist in delineation of hydric soils and are based predominantly on hydric soils near the margins of wetlands. Some hydric soils, including soils within the wettest parts of wetlands, may lack any of the approved hydric soil indicators. If a hydric soil indicator is present, the soil is determined to be hydric. If no hydric soil indicator is present, additional site information is used to assess whether the soil meets the definition of hydric soil.

Identification of hydric soils was aided through observation of surface hydrologic characteristics and indicators of wetland hydrology (e.g., drainage patterns). Soil characteristics were observation at several data points, placed both inside and outside the wetland. Holes were dug with a shovel to the depth needed to document an indicator or to confirm the absence of hydric soil indicators. Soil organic content was estimated visually and texturally. Soil colors were examined in the field immediately after sampling. Dry soils were moistened. Soil colors were determined through analysis of the hue, value, and chroma best represented in the Munsell® Soil Color Chart.

A.3 WETLAND HYDROLOGY

Wetland hydrology is determined by observable evidence that inundation or soil saturation have occurred during a significant portion of the growing season repeatedly over a period of years so that wet condition have been sufficient to produce wetland vegetation and hydric soils. Wetland hydrology indicators give evidence of a continuing wetland hydrologic regime. Wetland hydrology criteria were considered to be satisfied if it appeared that wetland hydrology was present for at least 5 to 12.5 percent (12 to 31 days) of the growing season. The growing season in western Washington is typically considered to be from March 1 to October 31 (244 days). However, the growing season is considered to have begun when: (a) evidence of plant growth has begun on two non-evergreen vascular plants, and (b) the soil reaches a temperature of 41 degrees Fahrenheit at 12 inches. The Seattle District Corps of Engineers requires 14 consecutive days of inundation or saturation for a wetland hydrology to be considered present.

Wetland hydrology was evaluated by direct visual observation of surface inundation or soil saturation in data plots. The area near each data point was examined for indicators of wetland hydrology. Wetland hydrology indicators are categorized as primary or secondary based on their estimated reliability. Wetland hydrology was considered present if there was evidence of one primary indicator or at least two secondary indicators.

Some primary indicators include surface water, a shallow water table or saturated soils observed within 12 inches of the surface, dried watermarks, drift lines, sediment deposits, water-stained leaves, and algal mat/crust. Some secondary indicators include a water table within 12 to 24 inches of the surface during the dry season; drainage patterns; a landscape position in a depression, drainage, or fringe of a water body; and a shallow restrictive layer capable of perching water within 12 inches of the surface.

A.4 DISCLAIMER

This methodology was prepared for reference use only and is not intended to replace Ecology's 1997 *Washington State Wetlands Identification and Delineation Manual*, the 1987 *Corps of Engineers Wetland Delineation Manual*, or the Corps' 2010 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (Version 2.0).

A.5 REFERENCES

Munsell Color, 1992, Munsell soil color charts: Newburgh, N. Y., Macbeth Division of Kollmorgen Instruments Corporation, 1 v.

Reed, P. B., Jr., 1988, National list of plant species that occur in wetlands: national summary: Washington, D. C., U. S. Fish and Wildlife Service, Biological Report 88(24), 244 p., available: http://www.fws.gov/pacific/ecoservices/habcon/wetlands/index .htm.

U. S. Army Corps of Engineers Engineer Research and Development Center, 2010, Regional supplement to the Corps of Engineers wetlands delineation manual: western mountains, valleys and coast region, Version 2.0: Vicksburg, Miss., U. S. Army Corps of Engineers Engineer Research and Development Center, Report ERDC/EL TR-10-3, 153 p.

U. S. Army Corps of Engineers Walla Walla District, 1993, 1993 supplement to national list of plant species that occur in wetlands: northwest (region 9): Walla Walla, Wash., U. S. Army Corps of Engineers Walla Walla District, informational public notice, 12 p., available: http://www.wli.nrcs.usda.gov/delineation/.

U. S. Army Corps of Engineers Waterways Experiment Station, 1987, Corps of Engineers wetlands delineation manual: Vicksburg, Miss., U. S. Army Corps of Engineers Waterways Experiment Station, Wetlands Research Program Technical Report Y-87-1, 143 p., available: http://www.wli.nrcs.usda.gov/delineation/.

U.S. Department of Agriculture (USDA) Soil Conservation Service (SCS), 1994, Changes in hydric soils of the United States: Washington, D.C., Office of the Federal Register, FR 59 (133): 35680-35681, July 13.

U.S. Department of Agriculture (USDA) Natural Resources Conservation Services (NRCS), 2010, Field indicators of hydric soils in the United States, Version 7.0, L.M. Vasilas, G.W. Hurt, and C.V. Noble (eds.). USDA, NRCS, in cooperation with the National Technical Committee for Hydric Soils.

Washington State Dept. of Ecology, 1997, Washington state wetlands identification and delineation manual: Olympia, Wash., Washington State Dept. of Ecology, Report 96-94.

Appendix B
USDA Soils Map and USFWS NWI Map

This page intentionally left blank.

Attachment 14

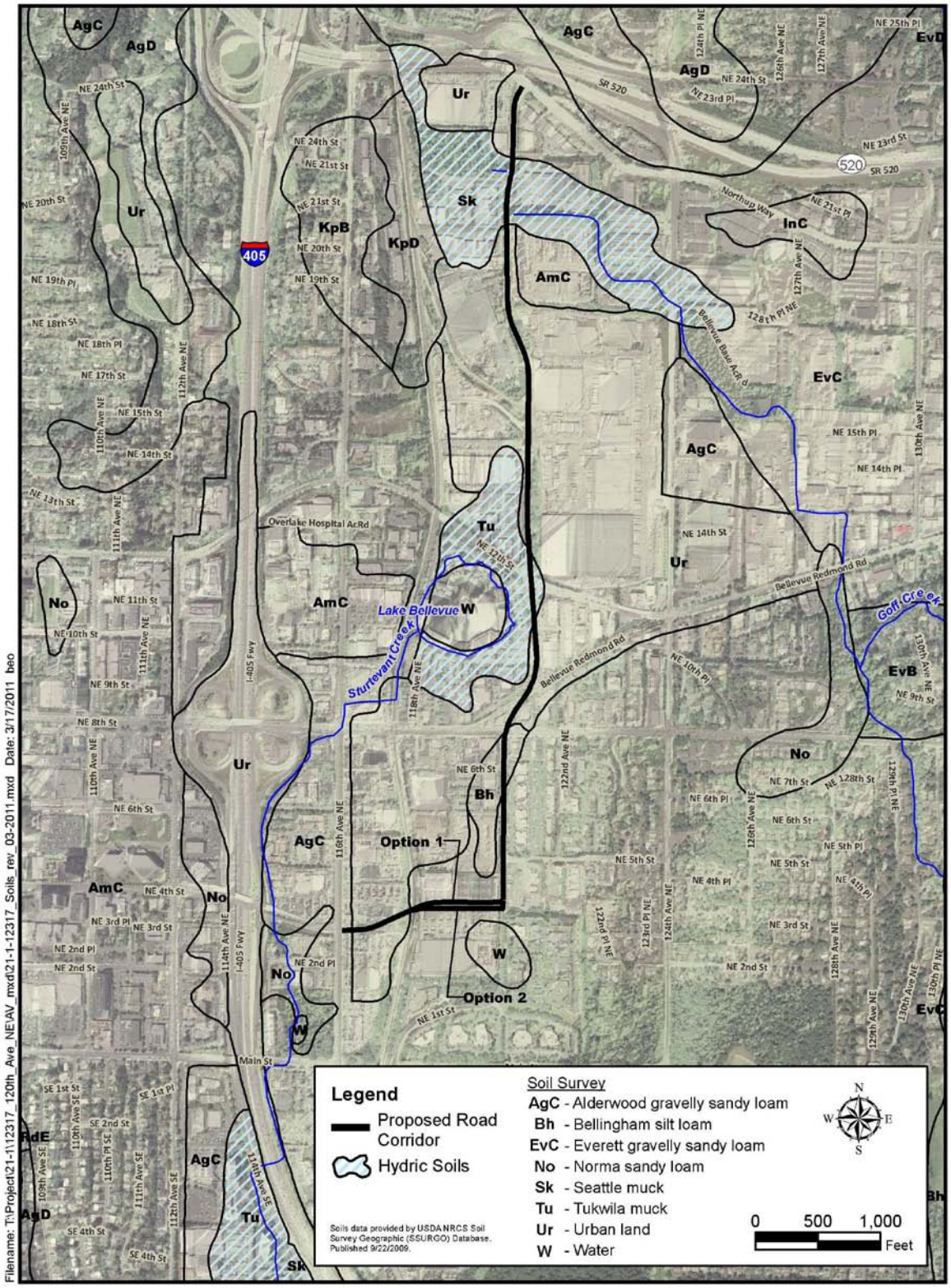


Figure B-1. USDA Soils Map

Attachment 14

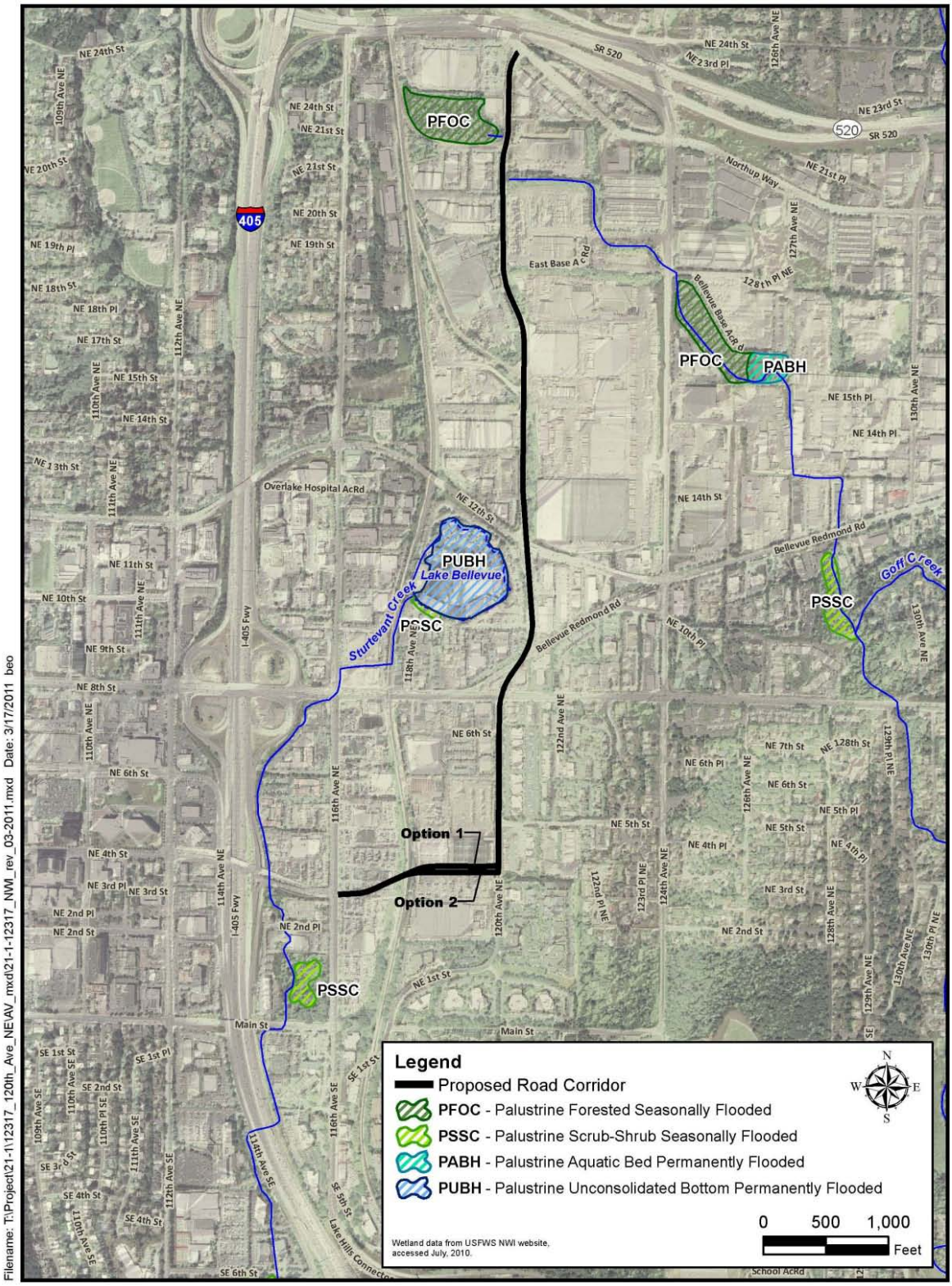


Figure B-2. USFWS NWI Map

Attachment 14

Appendix C
Wetland Field Data Sheets

This page intentionally left blank.

Attachment 14

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

Project/Site: 120th AVENUE NE EXPANSION City/County: Bellevue / King Sampling Date: 7-29-10
Applicant/Owner: PARSONS BRINCKERHOFF / CITY OF BELLEVUE State: WA Sampling Point: DP-1
Investigator(s): PER JOHNSON & BECKI KNIVETON Section, Township, Range: SEC. 25, T. 25N, R5E
Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
Subregion (LRR): A Lat: 47.627 Long: -122.179 Datum: _____
Soil Map Unit Name: Seattle muck (Sk) NWI classification: PFOC
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? NO Are "Normal Circumstances" present? Yes ✓ No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? NO (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks: Wetland ~~A~~ D

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix lasiandra	35%	y	FACW+
2. Populus trichocarpa	15%	y	FAC
3.			
4.			
	50% = Total Cover		

Sapling/Shrub Stratum (Plot size: 15')	Absolute % Cover	Dominant Species?	Indicator Status
1. Spirea douglasii	3%	y	FACW
2. Salix sitchensis	5%	y	FACW
3. Populus trichocarpa	5%	y	FAC
4. Salix lasiandra	5%	y	FACW+
5.			
	18% = Total Cover		

Herb Stratum (Plot size: 5')	Absolute % Cover	Dominant Species?	Indicator Status
1. Typha latifolia	5%	y	OBL
2. Schoenoplectus acutus	5%	y	OBL
3. Juncus effusus	5%	y	FACW
4. Scirpus microcarpus	15%	y	OBL
5. Juncus ensifolius	15%	y	FACW
6. Carex stipata	5%	y	OBL
7. Rumex crispus	T	N	FAC+
8. Equisetum telmateia	T	N	FACW
9.			
10.			
11.			
	80% = Total Cover		

Woody Vine Stratum (Plot size: 5')	Absolute % Cover	Dominant Species?	Indicator Status
1. N/A			
2.			
	N/A = Total Cover		

% Bare Ground in Herb Stratum N/A

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 12 (A)
Total Number of Dominant Species Across All Strata: 12 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

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 = _____

Hydrophytic Vegetation Indicators:
- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Wetland Non-Vascular Plants[1]
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

Attachment 14

SOIL

Sampling Point: 1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-18+"	10YR2/1	100%	N/A				muck	undecomposed organics throughout.

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

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

- ✓ Histosol (A1)
- __ Histic Epipedon (A2)
- __ Black Histic (A3)
- __ Hydrogen Sulfide (A4)
- __ Depleted Below Dark Surface (A11)
- __ Thick Dark Surface (A12)
- __ Sandy Mucky Mineral (S1)
- __ Sandy Gleyed Matrix (S4)
- __ Sandy Redox (S5)
- __ Stripped Matrix (S6)
- __ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- __ Loamy Gleyed Matrix (F2)
- __ Depleted Matrix (F3)
- __ Redox Dark Surface (F6)
- __ Depleted Dark Surface (F7)
- __ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- __ 2 cm Muck (A10)
- __ Red Parent Material (TF2)
- __ Very Shallow Dark Surface (TF12)
- __ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- __ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- __ Water Marks (B1)
- __ Sediment Deposits (B2)
- __ Drift Deposits (B3)
- __ Algal Mat or Crust (B4)
- __ Iron Deposits (B5)
- __ Surface Soil Cracks (B6)
- __ Inundation Visible on Aerial Imagery (B7)
- __ Sparsely Vegetated Concave Surface (B8)
- __ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- __ Salt Crust (B11)
- __ Aquatic Invertebrates (B13)
- __ Hydrogen Sulfide Odor (C1)
- __ Oxidized Rhizospheres along Living Roots (C3)
- __ Presence of Reduced Iron (C4)
- __ Recent Iron Reduction in Tilled Soils (C6)
- __ Stunted or Stressed Plants (D1) **(LRR A)**
- __ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- __ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ✓ Drainage Patterns (B10)
- __ Dry-Season Water Table (C2)
- __ Saturation Visible on Aerial Imagery (C9)
- __ Geomorphic Position (D2)
- __ Shallow Aquitard (D3)
- __ FAC-Neutral Test (D5)
- __ Raised Ant Mounds (D6) **(LRR A)**
- __ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ____ No ✓ Depth (inches): ____

Water Table Present? Yes ✓ No ____ Depth (inches): 12-inches

Saturation Present? (includes capillary fringe) Yes ✓ No ____ Depth (inches): surface

Wetland Hydrology Present? Yes ✓ No ____

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

Remarks: Stream (West Tributary to Kelsey Creek) present approx. 3-feet from data plot.

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

Project/Site: 120th AVENUE NE EXPANSION City/County: Bellevue/King Sampling Date: 7-29-10
Applicant/Owner: PARSONS BRINCKERHOFF / CITY OF BELLEVUE State: WA Sampling Point: DP-2
Investigator(s): PER JOHNSON & BECKI KNIVETON Section, Township, Range: SEC. 25, T. 25N, R5E
Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
Subregion (LRR): A Lat: 47.627 Long: -122.179 Datum: _____
Soil Map Unit Name: Everett gravelly sandy loam (EvC) NWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? NO Are "Normal Circumstances" present? Yes ✓ No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? NO (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____	No ✓	Is the Sampled Area within a Wetland? Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks: Wetland ~~A~~ D - upland

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus trichocarpa	35%	y	FAC
2.			
3.			
4.			
	35% = Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1. Populus trichocarpa	15%	y	FAC
2. Oemelaria cerasiformis	10%	y	FACU
3.			
4.			
5.			
	25% = Total Cover		
Herb Stratum (Plot size: 5')			
1. Equisetum telmateia	T	N	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	T = Total Cover		
Woody Vine Stratum (Plot size: 5')			
1. Rubus armeniacus	25%	y	FACU
2. Rubus ursinus	30%	y	FACU
	55% = Total Cover		

% Bare Ground in Herb Stratum 35%

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 5 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 2/5 = 40% (A/B)

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 = _____

Hydrophytic Vegetation Indicators:
___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ 5 - Wetland Non-Vascular Plants[1]
___ Problematic Hydrophytic Vegetation[1] (Explain)
[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

Attachment 14

SOIL

Sampling Point: 2

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 4/2	100%	N/A				loam	

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks: too many roots and rocks present to dig below 10-inches.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

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

Remarks:

Attachment 14

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

Project/Site: 120th AVENUE NE EXPANSION City/County: Bellevue / King Sampling Date: 7-29-10
Applicant/Owner: PARSONS BRINCKERHOFF / CITY OF BELLEVUE State: WA Sampling Point: DP-3
Investigator(s): PER JOHNSON & BECKI KNIVETON Section, Township, Range: SEC. 25, T25N, R5E
Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
Subregion (LRR): A Lat: 47.627 Long: -122.179 Datum: _____
Soil Map Unit Name: Seattle muck (Sk) NWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✓	No _____	Is the Sampled Area within a Wetland? Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks: Wetland ~~B~~C

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	N/A = Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1. Salix lasiandra	30%	y	~~FACW~~+
2. Spiraea douglasii	10%	y	FACW
3.			
4.			
5.			
	40% = Total Cover		
Herb Stratum (Plot size: 5')			
1. Phalaris arundinacea	95%	y	FACW
2. Oenanthe sarmentosa	T	N	OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	95% = Total Cover		
Woody Vine Stratum (Plot size: 5')			
1. Rubus armeniacus	10%	y	FACU
2.			
	10% = Total Cover		

% Bare Ground in Herb Stratum N/A

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 4 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 75% (A/B)

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 = _____

Hydrophytic Vegetation Indicators:
__ 1 - Rapid Test for Hydrophytic Vegetation
__ 2 - Dominance Test is >50%
__ 3 - Prevalence Index is ≤3.0[1]
__ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ 5 - Wetland Non-Vascular Plants[1]
__ Problematic Hydrophytic Vegetation[1] (Explain)
[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

Attachment 14

SOIL

Sampling Point: 3

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-18+"	2.5Y 2.5/1	100%	N/A	—			muck	
0-18+"	10Y 3/1	60%	10YR 4/6	40%	CS	M	sand	inclusion

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

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

- ✓ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ✓ Sediment Deposits (B2) (sand)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): ___

Water Table Present? Yes ___ No ✓ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ___

Wetland Hydrology Present? Yes ✓ No ___

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

Remarks: Soil was very moist but not saturated. West tributary of Kelsey Creek flows through wetland.

Attachment 14

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

Project/Site: 120th AVENUE NE EXPANSION City/County: Bellevue / King Sampling Date: 7-29-10
Applicant/Owner: PARSONS BRINCKERHOFF / CITY OF BELLEVUE State: WA Sampling Point: DP-4
Investigator(s): PER JOHNSON & BECKI KNIVETON Section, Township, Range: SEC. 25, T25N, R5E
Landform (hillslope, terrace, etc.): ____ Local relief (concave, convex, none): ____ Slope (%): ____
Subregion (LRR): A Lat: 47.627 Long: -122.179 Datum: ____
Soil Map Unit Name: Urban land (Ur) NWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ✓, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✓	No ____	Is the Sampled Area within a Wetland? Yes ✓ No ____
Hydric Soil Present?	Yes ✓	No ____	
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks: Within roadside ditch along east side of 120th AVE NE. Wetland B

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. N/A			
2.			
3.			
4.			
	N/A = Total Cover		

Sapling/Shrub Stratum (Plot size: 15')			
1. N/A			
2.			
3.			
4.			
5.			
	N/A = Total Cover		

Herb Stratum (Plot size: 5')			
1. Scirpus microcarpus	25%	y	OBL
2. Juncus effusus	25%	y	FACW
3. Phalaris arundinacea	50%	y	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100% = Total Cover		

Woody Vine Stratum (Plot size: 5')			
1. N/A			
2.			
	N/A = Total Cover		

% Bare Ground in Herb Stratum N/A

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

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 = ____

Hydrophytic Vegetation Indicators:
- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Wetland Non-Vascular Plants[1]
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks:

Attachment 14

SOIL

Sampling Point: 4

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-10"	10YR3/1	90%	N/A	—			sandy loam	(with sharp gravel/ ballast from road prism)
0-10"	10Y 5/1	10%	2.5Y5/4	8%	C	M	clay loam	(inclusion within sandy loam matrix)

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes ✓ No ___

Remarks: Soil disturbed/atypical. Data plot within roadside ditch. Soils appear to be reflective of disturbed conditions likely associated with periodic maintenance/dredging.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): ___

Water Table Present? Yes ___ No ✓ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ___

Wetland Hydrology Present? Yes ✓ No ___

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

Remarks: Within roadside ditch with presumed wetland hydrology present during the growing season.

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

Project/Site: 120th AVENUE NE EXPANSION City/County: Bellevue/King Sampling Date: 7-29-10
Applicant/Owner: PARSONS BRINCKERHOFF / CITY OF BELLEVUE State: WA Sampling Point: DP-5
Investigator(s): PER JOHNSON & BECKI KNIVETON Section, Township, Range: SEC. 25, T.25N, R5E
Landform (hillslope, terrace, etc.): ____ Local relief (concave, convex, none): ____ Slope (%): ____
Subregion (LRR): A Lat: 47.627 Long: -122.179 Datum: ____
Soil Map Unit Name: Urban land (Ur) NWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ✓, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✓	No ____	**Is the Sampled Area within a Wetland?** Yes ✓ No ____
Hydric Soil Present?	Yes ✓	No ____	
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks: in Wetland C & B

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix sitchensis	30%	y	FACW
2.			
3.			
4.			
	30% = Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1. Salix sitchensis	20%	y	FACW
2. Spiraea douglasii	20%	y	FACW
3.			
4.			
5.			
	40% = Total Cover		
Herb Stratum (Plot size: 5')			
1. Phalaris arundinacea	75%	y	FACW
2. Juncus effusus	25%	y	FACW
3. Scirpus microcarpus	10%	N	OBL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	110% = Total Cover		
Woody Vine Stratum (Plot size: 5')			
1. N/A			
2.			
	N/A = Total Cover		

% Bare Ground in Herb Stratum N/A

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)
Total Number of Dominant Species Across All Strata: 5 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

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 = ____

Hydrophytic Vegetation Indicators:
- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Wetland Non-Vascular Plants[1]
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks:

Attachment 14

SOIL

Sampling Point: DP-5

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-18"	(40%) 5Y2.5/1	40%	N/A				loam	high in organics
	(60%) 10YR3/2	60%	10YR4/6	40%	C	M	"	"

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ✓ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes ✓ No ___

Remarks: soil is disturbed / atypical likely due to periodic maintenance.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): ___

Water Table Present? Yes ___ No ✓ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ___

Wetland Hydrology Present? Yes ✓ No ___

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

Remarks: soil moist. presumed wetland hydrology during growing season.

Attachment 14

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

Project/Site: 120th AVENUE NE Expansion City/County: Bellevue / King Sampling Date: 7-29-10
Applicant/Owner: PARSONS BRINCKERHOFF / CITY OF BELLEVUE State: WA Sampling Point: DP-6
Investigator(s): PER JOHNSON & BECKI KNIVETON Section, Township, Range: SEC. 25, T. 25N, R5E
Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
Subregion (LRR): A Lat: 47.627 Long: -122.179 Datum: _____
Soil Map Unit Name: Urban land (Ur) - Tukwila muck mapped very nearby. NWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✓	No _____	Is the Sampled Area within a Wetland? Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks: Wetland ~~D~~ A

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix lasiandra	60%	y	FACW
2.			
3.			
4.			
	60% = Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1. Spiraea douglasii	70%	y	FACW
2. Populus trichocarpa	10%	N	FAC
3.			
4.			
5.			
	80% = Total Cover		
Herb Stratum (Plot size: 5')			
1. Agrostis spp.	30%	y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	30% = Total Cover		
Woody Vine Stratum (Plot size: 5')			
1. N/A			
2.			
	N/A = Total Cover		

% Bare Ground in Herb Stratum N/A

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

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 = _____

Hydrophytic Vegetation Indicators:
__ 1 - Rapid Test for Hydrophytic Vegetation
✓ 2 - Dominance Test is >50%
__ 3 - Prevalence Index is ≤3.0[1]
__ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ 5 - Wetland Non-Vascular Plants[1]
__ Problematic Hydrophytic Vegetation[1] (Explain)
[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

Attachment 14

SOIL

Sampling Point: DP 6

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 2/1	–	—				muck	
12+	2.5Y 4/1	70%	10YR 4/2	30	C	M	organic clay loam	

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

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

- ✓ Histosol (A1)
- __ Histic Epipedon (A2)
- __ Black Histic (A3)
- __ Hydrogen Sulfide (A4)
- __ Depleted Below Dark Surface (A11)
- __ Thick Dark Surface (A12)
- __ Sandy Mucky Mineral (S1)
- __ Sandy Gleyed Matrix (S4)
- __ Sandy Redox (S5)
- __ Stripped Matrix (S6)
- __ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- __ Loamy Gleyed Matrix (F2)
- __ Depleted Matrix (F3)
- __ Redox Dark Surface (F6)
- __ Depleted Dark Surface (F7)
- __ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- __ 2 cm Muck (A10)
- __ Red Parent Material (TF2)
- __ Very Shallow Dark Surface (TF12)
- __ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- __ Surface Water (A1)
- __ High Water Table (A2)
- __ Saturation (A3)
- __ Water Marks (B1)
- __ Sediment Deposits (B2)
- __ Drift Deposits (B3)
- __ Algal Mat or Crust (B4)
- __ Iron Deposits (B5)
- __ Surface Soil Cracks (B6)
- __ Inundation Visible on Aerial Imagery (B7)
- __ Sparsely Vegetated Concave Surface (B8)
- __ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- __ Salt Crust (B11)
- __ Aquatic Invertebrates (B13)
- __ Hydrogen Sulfide Odor (C1)
- __ Oxidized Rhizospheres along Living Roots (C3)
- __ Presence of Reduced Iron (C4)
- __ Recent Iron Reduction in Tilled Soils (C6)
- __ Stunted or Stressed Plants (D1) **(LRR A)**
- __ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- __ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ✓ Drainage Patterns (B10)
- __ Dry-Season Water Table (C2)
- __ Saturation Visible on Aerial Imagery (C9)
- ✓ Geomorphic Position (D2)
- __ Shallow Aquitard (D3)
- __ FAC-Neutral Test (D5)
- __ Raised Ant Mounds (D6) **(LRR A)**
- __ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ____ No ✓ Depth (inches): _____

Water Table Present? Yes ____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes ____ No ____

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

Remarks:

moist.

Attachment 14

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

Project/Site: 120th AVENUE NE EXPANSION City/County: Bellevue/King Sampling Date: 7-29-10
Applicant/Owner: PARSONS BRINCKERHOFF / CITY OF BELLEVUE State: WA Sampling Point: DP-7
Investigator(s): PER JOHNSON & BECKI KNIVETON Section, Township, Range: SEC. 25, T25N, R5E
Landform (hillslope, terrace, etc.): ____ Local relief (concave, convex, none): ____ Slope (%): ____
Subregion (LRR): A Lat: 47.627 Long: -122.179 Datum: ____
Soil Map Unit Name: Urban Land (Ur) NWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ____	No ✓	Is the Sampled Area within a Wetland? Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks: Wetland ~~D~~ A – Upland

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus trichocarpa	50%	y	FAC
2. Arbutus menziesii	20%	y	NI
3. Alnus rubra	20%	y	FAC
4.			
	90% = Total Cover		

Sapling/Shrub Stratum (Plot size: 15')	Absolute % Cover	Dominant Species?	Indicator Status
1. Oemelaria cerasiformis	30%	y	FACU
2. Spiraea douglasii	30%	y	FACW
3. Crataegus douglasii	20%	y	FAC
4.			
5.			
	80% = Total Cover		

Herb Stratum (Plot size: 5')	Absolute % Cover	Dominant Species?	Indicator Status
1. N/A			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	N/A = Total Cover		

Woody Vine Stratum (Plot size: 5')	Absolute % Cover	Dominant Species?	Indicator Status
1. Rubus armeniacus	20%	y	FACU
2. Rubus ursinus	30%	y	FACU
Rubus laciniatus	5%		FACU+
	55% = Total Cover		

% Bare Ground in Herb Stratum N/A

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)
Total Number of Dominant Species Across All Strata: 8 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	1	x 2 =	2
FAC species	3	x 3 =	9
FACU species	3	x 4 =	12
UPL species	0	x 5 =	5
Column Totals:	7 (A)		28 (B)

Prevalence Index = B/A = 4

Hydrophytic Vegetation Indicators:
___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ 5 - Wetland Non-Vascular Plants[1]
___ Problematic Hydrophytic Vegetation[1] (Explain)
[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks:

Attachment 14

SOIL

Sampling Point: DP-7

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 2/2	100%	N/A	—			loam	

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):
Type: Unknown - compacted
Depth (inches): 2-inches

Hydric Soil Present? Yes ___ No ✓

Remarks:
Very compacted. Refusal at 2-inches.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): ___
Water Table Present? Yes ___ No ✓ Depth (inches): ___
Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ___

Wetland Hydrology Present? Yes ___ No ✓

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

Remarks:

Appendix D
Wetland Rating Form

This page intentionally left blank.

Attachment 14

Wetland name or number ~~D~~ 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 ~~D~~ A Date of site visit: 7·29·10

Rated by PER JOHNSON Trained by Ecology? Yes ✓ No___ Date of training___

SEC: 28 TWNSHP: 25N RNGE: 5E Is S/T/R in Appendix D? Yes___ No ✓

Map of wetland unit: Figure ___ Estimated size 1-acre

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	24
Score for Hydrologic Functions	8
Score for Habitat Functions	14
TOTAL score for Functions	46

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	

Wetland name or number D/A

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

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

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

Attachment 14

Wetland name or number A

Classification of Wetland Units in 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 Saltwater Tidal Fringe it is rated as an* ***Estuarine*** *wetland.* Wetlands that were called 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 the only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.
✓ NO – go to 3 YES – The wetland class is **Flats**

   If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the entire wetland unit **meet 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) at least 20 acres (8 ha) in size;
   ___At least 30% of the open water area is deeper than 6.6 ft (2 m)?
✓ NO – go to 4 YES – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the entire wetland unit **meet all** of the following criteria?
   ____The wetland is on a slope (*slope can be very gradual*),
   ____The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.
   ____The water leaves the wetland **without being impounded**?
   NOTE: *Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3ft diameter and less than 1 foot deep).*
✓ NO - go to 5 YES – The wetland class is **Slope**

Wetland name or number DA

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

____ The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river

____ The overbank flooding occurs at least once every 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 during the year. *This means that any outlet, if present, is higher than the interior of the wetland.*

NO – go to 7 ✓ **YES** – The wetland class is **Depressional**

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

✓ NO – go to 8 **YES** – The wetland class is **Depressional**

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM clases. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the class listed in column 2 is less than 10% of the unit; classify the wetland using the class that represents more than 90% of the total area.

HGM Classes within the wetland unit being rated	*HGM Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of 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 if you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.

Attachment 14

Wetland name or number ~~D~~ A

		Points (only 1 score per box)
D	**Depressional and Flats Wetlands** **WATER QUALITY FUNCTIONS** - Indicators that the wetland unit functions to improve water quality	
D	**D 1. Does the wetland unit have the potential to improve water quality?**	*(see p.38)*
D	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 (*permanently flowing*) points = 1 Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch points = 1 (*If ditch is not permanently flowing treat unit as "intermittently flowing"*) Provide photo or drawing	Figure ___ 1
D	S 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic *(use NRCS definitions)* ✓ YES – Tukwila muck mapped nearby. points = 4 NO points = 0	4
D	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 ___ 5
D	D1.4 Characteristics of seasonal ponding or inundation. *This is the area of the wetland unit 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 yrs.* Area seasonally ponded is > ½ total area of wetland points = 4 ✓ Area seasonally ponded is > ¼ total area of wetland points = 2 Area seasonally ponded is < ¼ total area of wetland points = 0 Map of Hydroperiods	Figure ___ 2
D	**Total for D 1** *Add the points in the boxes above*	12
D	**D 2. Does the wetland unit have the opportunity to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland. *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* — Grazing in the wetland or within 150 ft ✓ Untreated stormwater discharges to wetland — Tilled fields or orchards within 150 ft of wetland ✓ A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging — Residential, urban areas, golf courses are within 150 ft of wetland — Wetland is fed by groundwater high in phosphorus or nitrogen — Other_____ ✓ **YES** multiplier is 2 **NO** multiplier is **1**	*(see p. 44)* multiplier 2
D	**TOTAL - Water Quality Functions** Multiply the score from D1 by D2 ***Add score to table on p. 1***	24

Wetland name or number ~~D~~ A

		Points (only 1 score per box)
D	**Depressional and Flats Wetlands** HYDROLOGIC FUNCTIONS - Indicators that the wetland unit functions to reduce flooding and stream degradation	
	D 3. Does the wetland unit have the potential to reduce flooding and erosion?	*(see p.46)*
D	D 3.1 Characteristics of surface water flows out of the wetland unit Unit is a depression with no surface water leaving it (no outlet) points = 4 Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2 Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* ✓ Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) points = 0	0
D	D 3.2 Depth of storage during wet periods *Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry).* Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 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 Unit 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	5
D	D 3.3 Contribution of wetland unit to storage in the watershed *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* The area of the basin is less than 10 times the area of unit points = 5 ✓ The area of the basin is 10 to 100 times the area of the unit points = 3 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
D	**Total for D 3** *Add the points in the boxes above*	8
D	**D 4. Does the wetland unit have the opportunity to reduce flooding and erosion?** Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. *Note which of the following indicators of opportunity apply.* — Wetland is in a headwater of a river or stream that has flooding problems — Wetland drains to a river or stream that has flooding problems — Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems — Other_____ **YES** multiplier is **2** ✓ **NO** multiplier is **1**	*(see p. 49)* multiplier 1*
D	**TOTAL - Hydrologic Functions** Multiply the score from D 3 by D 4 ***Add score to table on p. 1***	6

* Presume flow enters Lake Bellevue.

Attachment 14

Wetland name or number ~~B~~A

These questions apply to wetlands of all HGM classes. HABITAT FUNCTIONS - Indicators that unit functions to provide important habitat	**Points** (only 1 score per box)
H 1. Does the wetland unit have the potential to provide habitat for many species?	
H 1.1 Vegetation structure *(see p. 72)* *Check the types of vegetation classes present (as defined by Cowardin)- Size threshold for each class is ¼ acre or more than 10% of the area if unit is smaller than 2.5 acres.* ____Aquatic bed ✓ Emergent plants ✓ Scrub/shrub (areas where shrubs have >30% cover) ____Forested (areas where trees have >30% cover) *If the unit has a forested class check if:* ____The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon *Add the number of vegetation structures that qualify. If you have:* 4 structures or more — points = 4 3 structures — points = 2 ✓ 2 structures — points = 1 1 structure — points = 0 Map of Cowardin vegetation classes	Figure ___ 1
H 1.2. Hydroperiods *(see p. 73)* *Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ acre to count. (see text for descriptions of hydroperiods)* ____Permanently flooded or inundated ✓ Seasonally flooded or inundated ____Occasionally flooded or inundated ✓ Saturated only ____ Permanently flowing stream or river in, or adjacent to, the wetland ✓ Seasonally flowing stream in, or adjacent to, the wetland ____ ***Lake-fringe wetland*** **= 2 points** ____***Freshwater tidal wetland*** **= 2 points** 4 or more types present — points = 3 ✓ 3 types present — points = 2 2 types present — point = 1 1 type present — points = 0 Map of hydroperiods	Figure ___ 2
H 1.3. Richness of Plant Species *(see p. 75)* Count the number of plant species in the wetland that cover at least 10 ft^2. *(different patches of the same species can be combined to meet the size threshold)* *You do not have to name the species.* *Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle* If you counted: > 19 species — points = 2 ✓ 5 - 19 species — points = 1 < 5 species — points = 0 *List species below if you want to:*	1

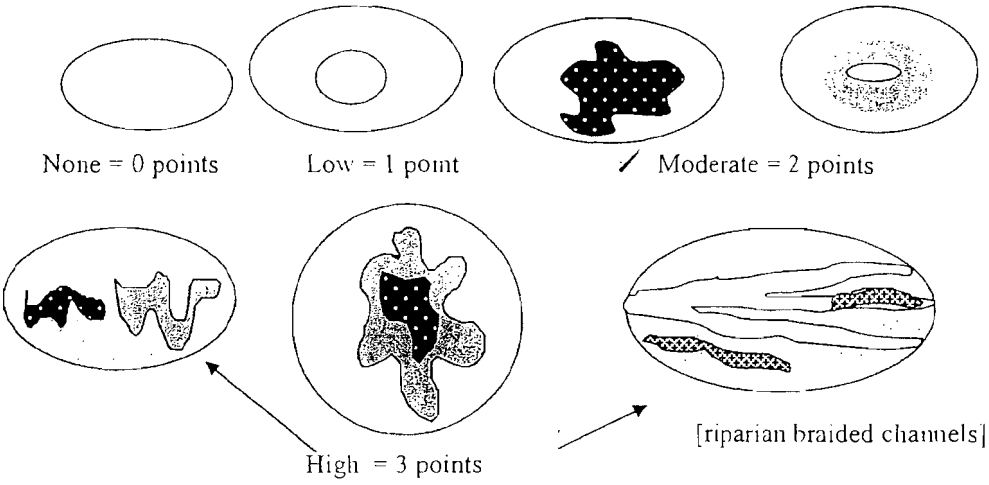
Total for page 4

Wetland name or number ~~V~~A

H 1.4. Interspersion of habitats *(see p. 76)*

Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.

Figure ___



2

NOTE: If you have four or more classes or three vegetation classes and open water the rating is always "high". Use map of Cowardin vegetation classes

H 1.5. Special Habitat Features: *(see p. 77)*

Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.

✓ Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long).

____ Standing snags (diameter at the bottom > 4 inches) in the wetland

____ Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft (10m)

____ Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)*

____ At least ¼ acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated.*(structures for egg-laying by amphibians)*

____ Invasive plants cover less than 25% of the wetland area in each stratum of plants

NOTE: The 20% stated in early printings of the manual on page 78 is an error.

1

H 1. TOTAL Score - potential for providing habitat
Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5

7

Comments

Attachment 14

Wetland name or number ~~B~~ A

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

Total for page 1

Wetland name or number ~~B~~ A

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

Attachment 14

Wetland name or number D A

H 2.4 Wetland Landscape *(choose the **one** description of the landscape around the wetland that best fits) (see p. 84)* There are at least 3 other wetlands within ½ 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 ½ mile points = 5 ✓ There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed points = 3 The wetland is Lake-fringe on a lake **with** disturbance and there are 3 other lake-fringe wetland within ½ mile points = 3 There is at least 1 wetland within ½ mile. points = 2 There are no wetlands within ½ mile. points = 0	3
H 2. TOTAL Score - opportunity for providing habitat *Add the scores from H2.1,H2.2, H2.3, H2.4*	7
TOTAL for H 1 from page 14	7
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	14

Wetland name or number ~~B~~ A

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.*	**Category**
SC 1.0 Estuarine wetlands *(see p. 86)* Does the wetland unit meet the following criteria for Estuarine wetlands? — The dominant water regime is tidal, — Vegetated, and — With a salinity greater than 0.5 ppt. YES = Go to SC 1.1 NO ✓	
SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? YES = Category I NO go to SC 1.2	**Cat. I**
SC 1.2 Is the wetland unit at least 1 acre in size and meets at least two of the following three conditions? YES = Category I NO = Category II — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp. are the only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category I. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual rating I/II**

Wetland name or number 5A

SC 2.0 Natural Heritage Wetlands *(see p. 87)* Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland unit being rated in a Section/Township/Range that contains a Natural Heritage wetland? *(this question is used to screen out most sites before you need to contact WNHP/DNR)* S/T/R information from Appendix D ✓ or accessed from WNHP/DNR web site ___ YES____ – contact WNHP/DNR (see p. 79) and go to SC 2.2 NO ✗ SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as or as a site with state threatened or endangered plant species? YES = Category I NO ____not a Heritage Wetland	**Cat. I**
SC 3.0 Bogs *(see p. 87)* Does the wetland unit (**or any part of the unit**) meet both the criteria for soils and vegetation in bogs? *Use the key below to identify if the wetland is a bog.* ***If you answer yes you will still need to rate the wetland based on its functions.*** 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 the soil profile? (See Appendix B for a field key to identify organic soils)? Yes - go to Q. 3 ✓ No - go to Q. 2 2. Does the unit 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 Q. 3 ✓ No - Is not a bog for purpose of rating 3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? Yes – Is a bog for purpose of rating No - go to Q. 4 NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog. *1.* 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)?* 2. YES = Category I No___ Is not a bog for purpose of rating	**Cat. I**

Wetland name or number DA

SC 4.0 Forested Wetlands *(see p. 90)* Does the wetland unit have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? *If you answer yes you will still need to rate the wetland based on its functions.* — **Old-growth forests**: (west of Cascade crest) Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/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 average diameters (dbh) exceeding 21 inches (53cm); crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth. YES = Category I NO ✓ not a forested wetland with special characteristics	**Cat. I**
SC 5.0 Wetlands in Coastal Lagoons *(see p. 91)* Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? — The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks — The lagoon in which the wetland is located contains surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)* YES = Go to SC 5.1 NO ✓ not a wetland in a coastal lagoon SC 5.1 Does the wetland meets 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 ¾ 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 feet) YES = Category I NO = Category II	**Cat. I** **Cat. II**

Wetland name or number ~~B~~ A

SC 6.0 Interdunal Wetlands *(see p. 93)* Is the wetland unit west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? YES - go to SC 6.1 NO ✓ not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its functions.*** In practical terms that means the following geographic areas: • Long Beach Peninsula- lands west of SR 103 • Grayland-Westport- lands west of SR 105 • Ocean Shores-Copalis- lands west of SR 115 and SR 109 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is once acre or larger? YES = Category II NO – go to SC 6.2 SC 6.2 Is the unit between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III	**Cat. II** **Cat. III**
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	

Attachment 14

Wetland name or number R 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 R B Date of site visit: 7.29.10

Rated by PER JOHNSON Trained by Ecology? Yes ✓ No ___ Date of training ___

SEC: 28 TWNSHP: 25N RNGE: 5E Is S/T/R in Appendix D? Yes ___ No ___

Map of wetland unit: Figure ___ Estimated size < 0.5 acres

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	12
Score for Hydrologic Functions	12
Score for Habitat Functions	8
TOTAL score for Functions	32

Category based on SPECIAL CHARACTERISTICS of wetland

I___ II___ Does not Apply ✓

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	

Wetland name or number C3

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

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

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

Attachment 14

Wetland name or number E B

Classification of Wetland Units in 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 Saltwater Tidal Fringe it is rated as an* ***Estuarine*** *wetland.* Wetlands that were called 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 the only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.
✓ NO – go to 3 YES – The wetland class is **Flats**

   If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the entire wetland unit **meet 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) at least 20 acres (8 ha) in size;
   ___At least 30% of the open water area is deeper than 6.6 ft (2 m)?
✓ NO – go to 4 YES – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the entire wetland unit **meet all** of the following criteria?
   ____The wetland is on a slope (*slope can be very gradual*),
   ____The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.
   ____The water leaves the wetland **without being impounded**?
   NOTE: *Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3ft diameter and less than 1 foot deep).*
NO - go to 5 ✓YES – The wetland class is **Slope**

Wetland name or number C B

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

____ The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river

____ The overbank flooding occurs at least once every 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 during the year. *This means that any outlet, if present, is higher than the interior of the wetland.*

✓ NO – go to 7 **YES** – The wetland class is **Depressional**

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

✓ NO – go to 8 **YES** – The wetland class is **Depressional**

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM clases. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the class listed in column 2 is less than 10% of the unit; classify the wetland using the class that represents more than 90% of the total area.

HGM Classes within the wetland unit being rated	*HGM Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of 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 if you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.

Rated as depressional because while there is a slope component, the roadside ditch complicates the classification.

Attachment 14

Wetland name or number EB

D	**Depressional and Flats Wetlands** **WATER QUALITY FUNCTIONS** - Indicators that the wetland unit functions to improve water quality	**Points** (only 1 score per box)
D	**D 1. Does the wetland unit have the potential to improve water quality?**	*(see p.38)*
D	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 (*permanently flowing*) points = 1 Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch points = 1 (*If ditch is not permanently flowing treat unit as "intermittently flowing"*) Provide photo or drawing	Figure ___ 1
D	S 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic *(use NRCS definitions)* YES points = 4 ✓ NO points = 0	0
D	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 ___ 5
D	D1.4 Characteristics of seasonal ponding or inundation. *This is the area of the wetland unit 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 yrs.* Area seasonally ponded is > ½ total area of wetland points = 4 Area seasonally ponded is > ¼ total area of wetland points = 2 ✓ Area seasonally ponded is < ¼ total area of wetland points = 0 Map of Hydroperiods	Figure ___ 0
D	**Total for D 1** *Add the points in the boxes above*	6
D	**D 2. Does the wetland unit have the opportunity to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland. *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* — Grazing in the wetland or within 150 ft ✓ Untreated stormwater discharges to wetland — Tilled fields or orchards within 150 ft of wetland — A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging — Residential, urban areas, golf courses are within 150 ft of wetland — Wetland is fed by groundwater high in phosphorus or nitrogen — Other _____ **YES** multiplier is 2 **NO** multiplier is 1	*(see p. 44)* multiplier 2
D	**TOTAL - Water Quality Functions** Multiply the score from D1 by D2 ***Add score to table on p. 1***	12

Wetland name or number E B

Attachment 14

		Points (only 1 score per box)
D	**Depressional and Flats Wetlands** HYDROLOGIC FUNCTIONS - Indicators that the wetland unit functions to reduce flooding and stream degradation	
	D 3. Does the wetland unit have the potential to reduce flooding and erosion?	*(see p.46)*
D	D 3.1 Characteristics of surface water flows out of the wetland unit Unit is a depression with no surface water leaving it (no outlet) points = 4 Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2 Unit is a "flat" depression (Q 7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* ✓ Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) points = 0	0
D	D 3.2 Depth of storage during wet periods *Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry).* Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 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 Unit 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	3
D	D 3.3 Contribution of wetland unit to storage in the watershed *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* The area of the basin is less than 10 times the area of unit points = 5 ✓ The area of the basin is 10 to 100 times the area of the unit points = 3 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
D	**Total for D 3** *Add the points in the boxes above*	6
D	**D 4. Does the wetland unit have the opportunity to reduce flooding and erosion?** Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. *Note which of the following indicators of opportunity apply.* — Wetland is in a headwater of a river or stream that has flooding problems — Wetland drains to a river or stream that has flooding problems — Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems — Other_____ ✓ **YES** multiplier is 2 **NO** multiplier is 1	*(see p. 49)* multiplier 2*
D	**TOTAL - Hydrologic Functions** Multiply the score from D 3 by D 4 ***Add score to table on p. 1***	12

* Presumed to drain to an urban stream with flooding problems.

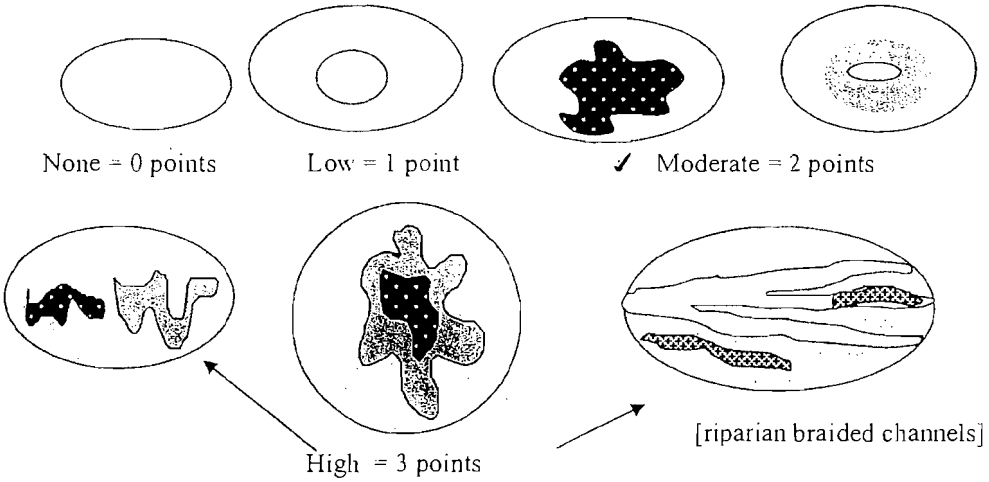
Attachment 14

Wetland name or number B

These questions apply to wetlands of all HGM classes. HABITAT FUNCTIONS - Indicators that unit functions to provide important habitat	**Points** (only 1 score per box)
H 1. Does the wetland unit have the potential to provide habitat for many species?	
H 1.1 Vegetation structure *(see p. 72)* *Check the types of vegetation classes present (as defined by Cowardin)- Size threshold for each class is ¼ acre or more than 10% of the area if unit is smaller than 2.5 acres.* ____Aquatic bed ✓ Emergent plants ✓ Scrub/shrub (areas where shrubs have >30% cover) ____Forested (areas where trees have >30% cover) *If the unit has a forested class check if:* ____The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon *Add the number of vegetation structures that qualify. If you have:* 4 structures or more — points = 4 3 structures — points = 2 ✓ 2 structures — points = 1 1 structure — points = 0 Map of Cowardin vegetation classes	Figure ___ 1
H 1.2. Hydroperiods *(see p. 73)* *Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ acre to count. (see text for descriptions of hydroperiods)* ____Permanently flooded or inundated — 4 or more types present — points = 3 ____Seasonally flooded or inundated — 3 types present — points = 2 ✓ Occasionally flooded or inundated — ✓ 2 types present — point = 1 ✓ Saturated only — 1 type present — points = 0 ____ Permanently flowing stream or river in, or adjacent to, the wetland ____ Seasonally flowing stream in, or adjacent to, the wetland ____ ***Lake-fringe wetland*** **= 2 points** ____***Freshwater tidal wetland*** **= 2 points** Map of hydroperiods	Figure ___ 1
H 1.3. Richness of Plant Species *(see p. 75)* Count the number of plant species in the wetland that cover at least 10 ft^2. *(different patches of the same species can be combined to meet the size threshold)* *You do not have to name the species.* *Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle* If you counted: > 19 species — points = 2 5 - 19 species — points = 1 ✓ < 5 species — points = 0 *List species below if you want to:*	0

Total for page 2

Wetland name or number E B

H 1.4. Interspersion of habitats *(see p. 76)* Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.  None = 0 points Low = 1 point ✓ Moderate = 2 points High = 3 points [riparian braided channels] NOTE: If you have four or more classes or three vegetation classes and open water the rating is always "high". Use map of Cowardin vegetation classes	Figure ___ 2
H 1.5. Special Habitat Features: *(see p. 77)* *Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.* ____Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long). ____Standing snags (diameter at the bottom > 4 inches) in the wetland ____Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft (10m) ____Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)* ____At least ¼ acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated.*(structures for egg-laying by amphibians)* ____ Invasive plants cover less than 25% of the wetland area in each stratum of plants *NOTE: The 20% stated in early printings of the manual on page 78 is an error.*	0
H 1. TOTAL Score - potential for providing habitat *Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5*	4

Comments

Attachment 14

Wetland name or number B

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

Total for page 1

Wetland name or number B

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

Attachment 14

Wetland name or number 2B

H 2.4 Wetland Landscape *(choose the **one** description of the landscape around the wetland that best fits)* ***(see p. 84)*** There are at least 3 other wetlands within ½ 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 ½ mile points = 5 ✓There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed points = 3 The wetland is Lake-fringe on a lake **with** disturbance and there are 3 other lake-fringe wetland within ½ mile points = 3 There is at least 1 wetland within ½ mile. points = 2 There are no wetlands within ½ mile. points = 0	3
H 2. TOTAL Score - opportunity for providing habitat *Add the scores from H2.1,H2.2, H2.3, H2.4*	4
TOTAL for H 1 from page 14	4
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	8

Wetland name or number E B

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.*	**Category**
SC 1.0 Estuarine wetlands *(see p. 86)* Does the wetland unit meet the following criteria for Estuarine wetlands? — The dominant water regime is tidal, — Vegetated, and — With a salinity greater than 0.5 ppt. YES = Go to SC 1.1 NO X	
SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? YES = Category I NO go to SC 1.2	**Cat. I**
SC 1.2 Is the wetland unit at least 1 acre in size and meets at least two of the following three conditions? YES = Category I NO = Category II — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp. are the only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category I. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual rating I/II**

Wetland name or number B

SC 2.0 Natural Heritage Wetlands *(see p. 87)* Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland unit being rated in a Section/Township/Range that contains a Natural Heritage wetland? *(this question is used to screen out most sites before you need to contact WNHP/DNR)* S/T/R information from Appendix D X or accessed from WNHP/DNR web site ___ YES ___ – contact WNHP/DNR (see p. 79) and go to SC 2.2 NO X SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as or as a site with state threatened or endangered plant species? YES = Category I NO ___ not a Heritage Wetland	**Cat. I**
SC 3.0 Bogs *(see p. 87)* Does the wetland unit (**or any part of the unit**) meet both the criteria for soils and vegetation in bogs? *Use the key below to identify if the wetland is a bog.* ***If you answer yes you will still need to rate the wetland based on its functions.*** 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 the soil profile? (See Appendix B for a field key to identify organic soils)? Yes - go to Q. 3 No - go to Q. 2 2. Does the unit 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 Q. 3 No - Is not a bog for purpose of rating 3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? Yes – Is a bog for purpose of rating No - go to Q. 4 NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog. *1.* 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)?* 2. YES = Category I No___ Is not a bog for purpose of rating	**Cat. I**

Wetland name or number EB

SC 4.0 Forested Wetlands *(see p. 90)* Does the wetland unit have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? *If you answer yes you will still need to rate the wetland based on its functions.* — **Old-growth forests**: (west of Cascade crest) Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/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 average diameters (dbh) exceeding 21 inches (53cm); crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth. YES = Category I NO X not a forested wetland with special characteristics	**Cat. I**
SC 5.0 Wetlands in Coastal Lagoons *(see p. 91)* Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? — The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks — The lagoon in which the wetland is located contains surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)* YES = Go to SC 5.1 NO X not a wetland in a coastal lagoon SC 5.1 Does the wetland meets 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 ¾ 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 feet) YES = Category I NO = Category II	**Cat. I** **Cat. II**

Attachment 14

Wetland name or number EB

SC 6.0 Interdunal Wetlands *(see p. 93)* Is the wetland unit west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? YES - go to SC 6.1 NO X not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its functions.*** In practical terms that means the following geographic areas: • Long Beach Peninsula- lands west of SR 103 • Grayland-Westport- lands west of SR 105 • Ocean Shores-Copalis- lands west of SR 115 and SR 109 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is once acre or larger? YES = Category II NO – go to SC 6.2 SC 6.2 Is the unit between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III	**Cat. II** **Cat. III**
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	

Attachment 14

Wetland name or number ~~B~~ C

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~~ C Date of site visit: 7·29·10

Rated by PER JOHNSON Trained by Ecology? Yes ✓ No___ Date of training___

SEC: 28 TWNSHP: 25N RNGE: 5E Is S/T/R in Appendix D? Yes___ No___

Map of wetland unit: Figure ____ Estimated size 1.5 acres

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	20
Score for Hydrologic Functions	26
Score for Habitat Functions	16
TOTAL score for Functions	62

Category based on SPECIAL CHARACTERISTICS of wetland

I___ II___ **Does not Apply** X

Final Category (choose the "highest" category from above) II

Summary of basic information about the wetland unit

Wetland Unit has Special Characteristics		Wetland HGM Class used for Rating	
Estuarine		Depressional	
Natural Heritage Wetland		Riverine	X
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	

Wetland name or number B C

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

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

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

Attachment 14

Wetland name or number B C

Classification of Wetland Units in 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 Saltwater Tidal Fringe it is rated as an* ***Estuarine*** *wetland.* Wetlands that were called 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 the only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.
✓ NO – go to 3 YES – The wetland class is **Flats**

   If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the entire wetland unit **meet 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) at least 20 acres (8 ha) in size;
   ___At least 30% of the open water area is deeper than 6.6 ft (2 m)?
✓NO – go to 4 YES – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the entire wetland unit **meet all** of the following criteria?
   ____The wetland is on a slope (*slope can be very gradual*),
   ____The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.
   ____The water leaves the wetland **without being impounded**?
   NOTE: *Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3ft diameter and less than 1 foot deep).*
✓ NO - go to 5 YES – The wetland class is **Slope**

Wetland name or number B C

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

/ The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river

/ The overbank flooding occurs at least once every 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 during the year. *This means that any outlet, if present, is higher than the interior of the wetland.*

✓ NO – go to 7 **YES** – The wetland class is **Depressional**

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

✓ NO – go to 8 **YES** – The wetland class is **Depressional**

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM clases. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the class listed in column 2 is less than 10% of the unit; classify the wetland using the class that represents more than 90% of the total area.

HGM Classes within the wetland unit being rated	*HGM Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of 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 if you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.

Attachment 14

Wetland name or number B C

		Points (only 1 score per box)
R	**Riverine and Freshwater Tidal Fringe Wetlands** WATER QUALITY FUNCTIONS - Indicators that wetland functions to improve water quality	
R	**R 1. Does the wetland unit have the potential to improve water quality?**	*(see p.52)*
R	R 1.1 Area of surface depressions within the riverine wetland that can trap sediments during a flooding event: Depressions cover >3/4 area of wetland — points = 8 ✓ Depressions cover > 1/2 area of wetland — points = 4 If depressions > ½ of area of unit draw polygons on aerial photo or map Depressions present but cover < 1/2 area of wetland — points = 2 No depressions present — points = 0	Figure ___ 4*
R	R 1.2 Characteristics of the vegetation in the unit (areas with >90% cover at person height): Trees or shrubs > 2/3 the area of the unit — points = 8 ✓ Trees or shrubs > 1/3 area of the unit — points = 6 Ungrazed, herbaceous plants > 2/3 area of unit — points = 6 Ungrazed herbaceous plants > 1/3 area of unit — points = 3 Trees, shrubs, and ungrazed herbaceous < 1/3 area of unit — points = 0 Aerial photo or map showing polygons of different vegetation types	Figure ___ 6
R	*Add the points in the boxes above*	10
R	**R 2. Does the wetland unit have the opportunity to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* — Grazing in the wetland or within 150ft ✓ Untreated stormwater discharges to wetland — Tilled fields or orchards within 150 feet of wetland — A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging — Residential, urban areas, golf courses are within 150 ft of wetland — The river or stream linked to the wetland has a contributing basin where human activities have raised levels of sediment, toxic compounds or nutrients in the river water above standards for water quality — Other _____ ✓ **YES** multiplier is 2 **NO** multiplier is 1	*(see p.53)* multiplier 2
R	**TOTAL - Water Quality Functions** Multiply the score from R 1 by R 2 ***Add score to table on p. 1***	20

Comments

*Based on field visit and review of offsite by aerial photo.

Wetland name or number ~~B~~ C

Attachment 14

R	**Riverine and Freshwater Tidal Fringe Wetlands** HYDROLOGIC FUNCTIONS - Indicators that wetland functions to reduce flooding and stream erosion	**Points** (only 1 score per box)
	R 3. Does the wetland unit have the potential to reduce flooding and erosion?	*(see p.54)*
R	R 3.1 Characteristics of the overbank storage the unit provides: *Estimate the average width of the wetland unit perpendicular to the direction of the flow and the width of the stream or river channel (distance between banks). Calculate the ratio: (average width of unit)/(average width of stream between banks).* If the ratio is more than 20 points = 9 ✓ If the ratio is between 10 – 20 points = 6 If the ratio is 5 - <10 points = 4 If the ratio is 1 - <5 points = 2 If the ratio is < 1 points = 1 ~60 ft. average / ~4 ft. ave. = 15 Aerial photo or map showing average widths	Figure ___ 6
R	R 3.2 Characteristics of vegetation that slow down water velocities during floods: *Treat large woody debris as "forest or shrub". Choose the points appropriate for the best description.* (polygons need to have >90% cover at person height NOT Cowardin classes): ✓ Forest or shrub for >1/3 area OR herbaceous plants > 2/3 area points = 7 Forest or shrub for > 1/10 area OR herbaceous plants > 1/3 area points = 4 Vegetation does not meet above criteria points = 0 Aerial photo or map showing polygons of different vegetation types	Figure ___ 7
R	*Add the points in the boxes above*	13
R	**R 4. Does the wetland unit have the opportunity to reduce flooding and erosion?** Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. *Note which of the following conditions apply.* ✓ There are human structures and activities downstream (roads, buildings, bridges, farms) that can be damaged by flooding. ✓ There are natural resources downstream (e.g. salmon redds) that can be damaged by flooding — Other_____ *(Answer NO if the major source of water to the wetland is controlled by a reservoir or the wetland is tidal fringe along the sides of a dike)* ✓ **YES** multiplier is **2** **NO** multiplier is **1**	*(see p.57)* multiplier 2
R	**TOTAL - Hydrologic Functions** Multiply the score from R 3 by R 4 ***Add score to table on p. 1***	26

Comments

Attachment 14

Wetland name or number ~~B~~ C

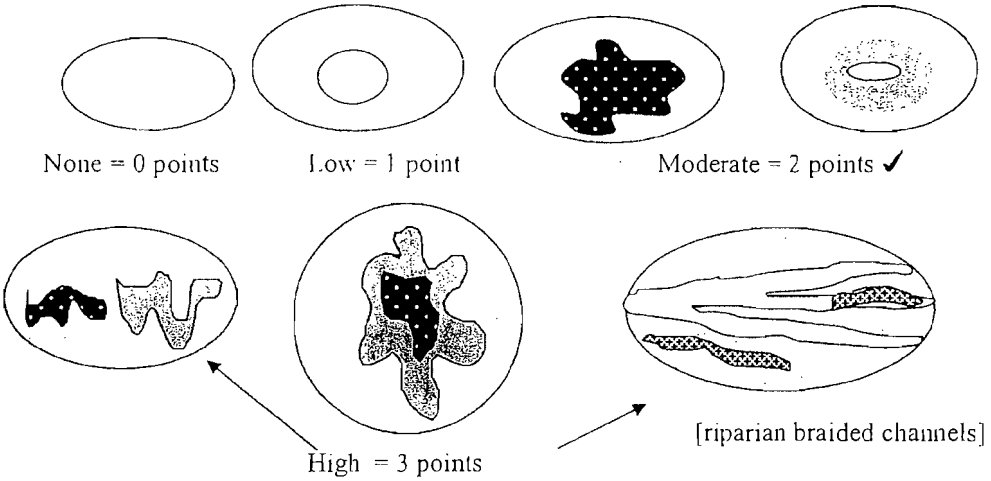
These questions apply to wetlands of all HGM classes. HABITAT FUNCTIONS - Indicators that unit functions to provide important habitat	**Points** (only 1 score per box)
H 1. Does the wetland unit have the potential to provide habitat for many species?	
H 1.1 Vegetation structure *(see p. 72)* *Check the types of vegetation classes present (as defined by Cowardin)- Size threshold for each class is ¼ acre or more than 10% of the area if unit is smaller than 2.5 acres.* ___ Aquatic bed ✓ Emergent plants ✓ Scrub/shrub (areas where shrubs have >30% cover) ___ Forested (areas where trees have >30% cover) *If the unit has a forested class check if:* ___ The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon *Add the number of vegetation structures that qualify. If you have:* 4 structures or more — points = 4 3 structures — points = 2 ✓ 2 structures — points = 1 1 structure — points = 0 Map of Cowardin vegetation classes	Figure ___ 1
H 1.2. Hydroperiods *(see p. 73)* *Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ acre to count. (see text for descriptions of hydroperiods)* ___ Permanently flooded or inundated ___ Seasonally flooded or inundated ✓ Occasionally flooded or inundated ✓ Saturated only ✓ Permanently flowing stream or river in, or adjacent to, the wetland ___ Seasonally flowing stream in, or adjacent to, the wetland ___ ***Lake-fringe wetland* = 2 points** ___ ***Freshwater tidal wetland* = 2 points** 4 or more types present — points = 3 ✓ 3 types present — points = 2 2 types present — point = 1 1 type present — points = 0 Map of hydroperiods	Figure ___ 2
H 1.3. Richness of Plant Species *(see p. 75)* Count the number of plant species in the wetland that cover at least 10 ft^2. *(different patches of the same species can be combined to meet the size threshold)* *You do not have to name the species.* *Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle* If you counted: > 19 species — points = 2 ✓ 5 - 19 species — points = 1 < 5 species — points = 0 *List species below if you want to:*	1

Total for page 4

Wetland name or number B C

H 1.4. Interspersion of habitats *(see p. 76)*

Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.



NOTE: If you have four or more classes or three vegetation classes and open water the rating is always "high". Use map of Cowardin vegetation classes

Figure ___ 2

H 1.5. Special Habitat Features: *(see p. 77)*

Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.

✓ Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long).

✓ Standing snags (diameter at the bottom > 4 inches) in the wetland

___ Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft (10m)

___ Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)*

___ At least ¼ acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated.*(structures for egg-laying by amphibians)*

___ Invasive plants cover less than 25% of the wetland area in each stratum of plants

NOTE: The 20% stated in early printings of the manual on page 78 is an error.

2

H 1. TOTAL Score - potential for providing habitat
Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5

8

Comments

Attachment 14

Wetland name or number B C

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

Total for page 1

Wetland name or number B C

H 2.3 Near or adjacent to other priority habitats listed by WDFW *(see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report http://wdfw.wa.gov/hab/phslist.htm)*

Which of the following priority habitats are within 330ft (100m) of the wetland unit? *NOTE: the connections do not have to be relatively undisturbed.*

____ **Aspen Stands:** Pure or mixed stands of aspen greater than 0.4 ha (1 acre).

✓ **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report p. 152*).

____ **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.

____ **Old-growth/Mature forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age. (Mature forests) Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest.

____ **Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158*).

✓ **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.

____ **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161*).

✓ **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.

____ **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report: pp. 167-169 and glossary in Appendix A).*

____ **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.

____ **Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft.

____ **Talus:** Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.

✓ **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 51 cm (20 in) in western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30 cm (12 in) in diameter at the largest end, and > 6 m (20 ft) long.

✓ If wetland has **3 or more** priority habitats = **4 points**
If wetland has **2** priority habitats = **3 points**
If wetland has **1** priority habitat = **1 point** No habitats = 0 points

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4)

4

Wetland name or number ~~B~~ C

H 2.4 Wetland Landscape *(choose the **one** description of the landscape around the wetland that best fits)* ***(see p. 84)*** There are at least 3 other wetlands within ½ 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 ½ mile points = 5 ✓ There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed points = 3 The wetland is Lake-fringe on a lake **with** disturbance and there are 3 other lake-fringe wetland within ½ mile points = 3 There is at least 1 wetland within ½ mile. points = 2 There are no wetlands within ½ mile. points = 0	3
H 2. TOTAL Score - opportunity for providing habitat *Add the scores from H2.1,H2.2, H2.3, H2.4*	8
TOTAL for H 1 from page 14	8
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	16

Wetland name or number B C

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.*	**Category**
SC 1.0 Estuarine wetlands *(see p. 86)* Does the wetland unit meet the following criteria for Estuarine wetlands? — The dominant water regime is tidal, — Vegetated, and — With a salinity greater than 0.5 ppt. YES = Go to SC 1.1 NO ✓	
SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? YES = Category I NO go to SC 1.2	**Cat. I**
SC 1.2 Is the wetland unit at least 1 acre in size and meets at least two of the following three conditions? YES = Category I NO = Category II — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp. are the only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category I. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual rating I/II**

Attachment 14

Wetland name or number ~~B~~ C

SC 2.0 Natural Heritage Wetlands *(see p. 87)* Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland unit being rated in a Section/Township/Range that contains a Natural Heritage wetland? *(this question is used to screen out most sites before you need to contact WNHP/DNR)* S/T/R information from Appendix D ✓ or accessed from WNHP/DNR web site ___ YES___ – contact WNHP/DNR (see p. 79) and go to SC 2.2 NO ✕ SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as or as a site with state threatened or endangered plant species? YES = Category I NO ____not a Heritage Wetland	**Cat. I**
SC 3.0 Bogs *(see p. 87)* Does the wetland unit (**or any part of the unit**) meet both the criteria for soils and vegetation in bogs? *Use the key below to identify if the wetland is a bog.* ***If you answer yes you will still need to rate the wetland based on its functions.*** 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 the soil profile? (See Appendix B for a field key to identify organic soils)? Yes - go to Q. 3 ✓ No - go to Q. 2 2. Does the unit 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 Q. 3 ✓ No - Is not a bog for purpose of rating 3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? Yes – Is a bog for purpose of rating No - go to Q. 4 NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog. *1.* 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)?* 2. YES = Category I No___ Is not a bog for purpose of rating	**Cat. I**

Wetland name or number B C

SC 4.0 Forested Wetlands *(see p. 90)* Does the wetland unit have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? *If you answer yes you will still need to rate the wetland based on its functions.* — **Old-growth forests**: (west of Cascade crest) Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/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 average diameters (dbh) exceeding 21 inches (53cm); crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth. YES = Category I NO X not a forested wetland with special characteristics	**Cat. I**
SC 5.0 Wetlands in Coastal Lagoons *(see p. 91)* Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? — The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks — The lagoon in which the wetland is located contains surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)* YES = Go to SC 5.1 NO X not a wetland in a coastal lagoon SC 5.1 Does the wetland meets 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 ¾ 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 feet) YES = Category I NO = Category II	**Cat. I** **Cat. II**

Wetland name or number B C

SC 6.0 Interdunal Wetlands *(see p. 93)* Is the wetland unit west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? YES - go to SC 6.1 NO X not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its functions.*** In practical terms that means the following geographic areas: • Long Beach Peninsula- lands west of SR 103 • Grayland-Westport- lands west of SR 105 • Ocean Shores-Copalis- lands west of SR 115 and SR 109 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is once acre or larger? YES = Category II NO – go to SC 6.2 SC 6.2 Is the unit between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III	**Cat. II** **Cat. III**
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	

Attachment 14

Wetland name or number AD

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 AD Date of site visit: 7-29-10

Rated by PER JOHNSON Trained by Ecology? Yes✓ No___ Date of training___

SEC: 28 TWNSHP: 25N RNGE: 5E Is S/T/R in Appendix D? Yes___ No___

Map of wetland unit: Figure ____ Estimated size 5-acres

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	20
Score for Hydrologic Functions	16
Score for Habitat Functions	24
TOTAL score for Functions	60

Category based on SPECIAL CHARACTERISTICS of wetland

I___ II___ **Does not Apply** X

Final Category (choose the "highest" category from above) II

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	X

Wetland name or number A D

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

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

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

Attachment 14

Wetland name or number A D

Classification of Wetland Units in 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 Saltwater Tidal Fringe it is rated as an* ***Estuarine*** *wetland.* Wetlands that were called 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 the only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.
✓ NO – go to 3 **YES** – The wetland class is **Flats**

   If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the entire wetland unit **meet 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) at least 20 acres (8 ha) in size;
   ___At least 30% of the open water area is deeper than 6.6 ft (2 m)?
✓ NO – go to 4 **YES** – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the entire wetland unit **meet all** of the following criteria?
   ____The wetland is on a slope (*slope can be very gradual*),
   ____The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.
   ____The water leaves the wetland **without being impounded**?
   NOTE: *Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3ft diameter and less than 1 foot deep).*
✓ NO - go to 5 **YES** – The wetland class is **Slope**

Wetland name or number A D

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

   ? The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river

   ? The overbank flooding occurs at least once every 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 during the year. *This means that any outlet, if present, is higher than the interior of the wetland.*

   NO – go to 7 ✓ YES – The wetland class is **Depressional**

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

   ✓ NO – go to 8 YES – The wetland class is **Depressional**

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM clases. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the class listed in column 2 is less than 10% of the unit; classify the wetland using the class that represents more than 90% of the total area.

HGM Classes within the wetland unit being rated	*HGM Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional ✓
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of 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 if you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.

☆ Not sure how much flow fluctuates with the trib. that runs through wetland A D. No evidence of high flooding. Either way, rated at depression.

Attachment 14

Wetland name or number ~~A~~ D

D	**Depressional and Flats Wetlands** **WATER QUALITY FUNCTIONS** - Indicators that the wetland unit functions to improve water quality	**Points** (only 1 score per box)
D	**D 1. Does the wetland unit have the potential to improve water quality?**	*(see p.38)*
D	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 (*permanently flowing*) points = 1 Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch points = 1 (*If ditch is not permanently flowing treat unit as "intermittently flowing"*) Provide photo or drawing	Figure ___ 1
D	S 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic *(use NRCS definitions)* ✓ YES – mapped as Seattle muck (Sk) points = 4 NO points = 0	4
D	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 ___ 5
D	D1.4 Characteristics of seasonal ponding or inundation. *This is the area of the wetland unit 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 yrs.* Area seasonally ponded is > ½ total area of wetland points = 4 Area seasonally ponded is > ¼ total area of wetland points = 2 ✓ Area seasonally ponded is < ¼ total area of wetland points = 0 Map of Hydroperiods	Figure ___ 0
D	**Total for D 1** *Add the points in the boxes above*	10
D	**D 2. Does the wetland unit have the opportunity to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland. *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* — Grazing in the wetland or within 150 ft ✓ Untreated stormwater discharges to wetland — Tilled fields or orchards within 150 ft of wetland — A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging — Residential, urban areas, golf courses are within 150 ft of wetland — Wetland is fed by groundwater high in phosphorus or nitrogen — Other _____ ✓ **YES** multiplier is **2** **NO** multiplier is **1**	*(see p. 44)* multiplier 2
D	**TOTAL - Water Quality Functions** Multiply the score from D1 by D2 ***Add score to table on p. 1***	20

Wetland name or number ~~A~~ D

Attachment 14

D	**Depressional and Flats Wetlands** HYDROLOGIC FUNCTIONS - Indicators that the wetland unit functions to reduce flooding and stream degradation	**Points** (only 1 score per box)
	D 3. Does the wetland unit have the potential to reduce flooding and erosion?	*(see p.46)*
D	D 3.1 Characteristics of surface water flows out of the wetland unit Unit is a depression with no surface water leaving it (no outlet) points = 4 Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2 Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* ✓ Unit has an unconstricted, or slightly constricted, surface outlet *(permanently flowing)* points = 0	0
D	D 3.2 Depth of storage during wet periods *Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry).* Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 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 Unit 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	3
D	D 3.3 Contribution of wetland unit to storage in the watershed *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* ✓ The area of the basin is less than 10 times the area of unit points = 5 The area of the basin is 10 to 100 times the area of the unit points = 3 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	5
D	**Total for D 3** *Add the points in the boxes above*	8
D	**D 4. Does the wetland unit have the opportunity to reduce flooding and erosion?** Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. *Note which of the following indicators of opportunity apply.* ✓ Wetland is in a headwater of a river or stream that has flooding problems — Wetland drains to a river or stream that has flooding problems — Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems — Other_____ ✓ **YES** multiplier is **2** **NO** multiplier is **1**	*(see p. 49)* multiplier 2
D	**TOTAL - Hydrologic Functions** Multiply the score from D 3 by D 4 ***Add score to table on p. 1***	16

Attachment 14

Wetland name or number A D

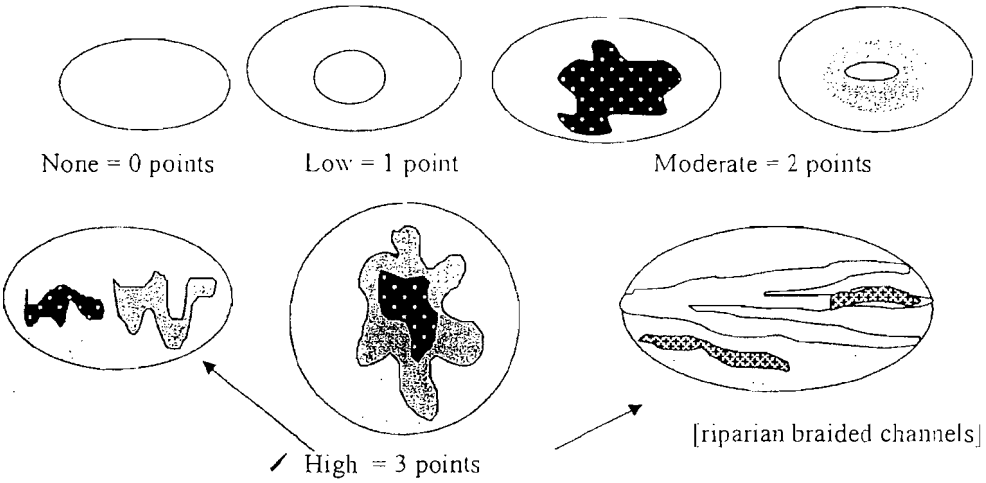
These questions apply to wetlands of all HGM classes. HABITAT FUNCTIONS - Indicators that unit functions to provide important habitat	**Points** (only 1 score per box)
H 1. Does the wetland unit have the potential to provide habitat for many species?	
H 1.1 Vegetation structure *(see p. 72)* *Check the types of vegetation classes present (as defined by Cowardin)- Size threshold for each class is ¼ acre or more than 10% of the area if unit is smaller than 2.5 acres.* ✓ Aquatic bed ✓ Emergent plants ✓ Scrub/shrub (areas where shrubs have >30% cover) ✓ Forested (areas where trees have >30% cover) *If the unit has a forested class check if:* ___ The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon *Add the number of vegetation structures that qualify. If you have:* ✓ 4 structures or more — points = 4 3 structures — points = 2 2 structures — points = 1 1 structure — points = 0 Map of Cowardin vegetation classes	Figure ___ 4
H 1.2. Hydroperiods *(see p. 73)* *Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ acre to count. (see text for descriptions of hydroperiods)* ___ Permanently flooded or inundated — 4 or more types present — points = 3 ___ Seasonally flooded or inundated — ✓ 3 types present — points = 2 ✓ Occasionally flooded or inundated — 2 types present — point = 1 ✓ Saturated only — 1 type present — points = 0 ✓ Permanently flowing stream or river in, or adjacent to, the wetland ___ Seasonally flowing stream in, or adjacent to, the wetland ___ ***Lake-fringe wetland*** **= 2 points** ___ ***Freshwater tidal wetland*** **= 2 points** Map of hydroperiods	Figure ___ 2
H 1.3. Richness of Plant Species *(see p. 75)* Count the number of plant species in the wetland that cover at least 10 ft^2. *(different patches of the same species can be combined to meet the size threshold)* *You do not have to name the species.* *Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle* If you counted: ✓ > 19 species — points = 2 5 - 19 species — points = 1 < 5 species — points = 0 *List species below if you want to:*	2

Total for page 8

Wetland name or number A D

H 1.4. Interspersion of habitats *(see p. 76)*

Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.



NOTE: If you have four or more classes or three vegetation classes and open water the rating is always "high". Use map of Cowardin vegetation classes

Figure ___

3

H 1.5. Special Habitat Features: *(see p. 77)*

Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.

✓ Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long).

✓ Standing snags (diameter at the bottom > 4 inches) in the wetland

___ Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft (10m)

___ Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)*

___ At least ¼ acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated.*(structures for egg-laying by amphibians)*

✓ Invasive plants cover less than 25% of the wetland area in each stratum of plants

NOTE: The 20% stated in early printings of the manual on page 78 is an error.

3

H 1. TOTAL Score - potential for providing habitat
Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5

14

Comments

Attachment 14

Wetland name or number A D

H 2. Does the wetland unit have the opportunity to provide habitat for many species?	
H 2.1 Buffers *(see p. 80)* *Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed."* — 100 m (330ft) 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** — 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4** — 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference **Points = 4** — 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference, . **Points = 3** — 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. **Points = 3** **If buffer does not meet any of the criteria above** — No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** — No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** — Heavy grazing in buffer. **Points = 1** — Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland **Points = 0.** ✓ — Buffer does not meet any of the criteria above. **Points = 1** Aerial photo showing buffers	Figure ___ 1
H 2.2 Corridors and Connections *(see p. 81)* H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft wide, has at least 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (*dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor*). YES = **4 points** (*go to H 2.3*) ✓NO = go to H 2.2.2 H 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50ft 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? YES = **2 points** (*go to H 2.3*) ✓ NO = H 2.2.3 H 2.2.3 Is the wetland: within 5 mi (8km) of a brackish or salt water estuary OR (~7 miles) within 3 mi of a large field or pasture (>40 acres) OR within 1 mi of a lake greater than 20 acres? (~1-7 miles) YES = **1 point** ✓ NO = **0 points**	0

Total for page 1

Wetland name or number A D

H 2.3 Near or adjacent to other priority habitats listed by WDFW *(see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report http://wdfw.wa.gov/hab/phslist.htm)*

Which of the following priority habitats are within 330ft (100m) of the wetland unit? *NOTE: the connections do not have to be relatively undisturbed.*

____**Aspen Stands:** Pure or mixed stands of aspen greater than 0.4 ha (1 acre).

✓ **Biodiversity Areas and Corridors:** Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report p. 152*).

____**Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.

____**Old-growth/Mature forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age. (Mature forests) Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest.

____**Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158*).

✓ **Riparian:** The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.

____**Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161*).

✓ **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.

____ **Nearshore:** Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report: pp. 167-169 and glossary in Appendix A).*

____**Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.

____**Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft.

____**Talus:** Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.

✓ **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 51 cm (20 in) in western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30 cm (12 in) in diameter at the largest end, and > 6 m (20 ft) long.

✓ If wetland has **3 or more** priority habitats = **4 points**
If wetland has **2** priority habitats = **3 points**
If wetland has **1** priority habitat = **1 point** No habitats = 0 points

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4)

4

Attachment 14

Wetland name or number A D

H 2.4 Wetland Landscape *(choose the one description of the landscape around the wetland that best fits)* ***(see p. 84)*** There are at least 3 other wetlands within ½ 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 ½ mile points = 5 There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed points = 3 The wetland is Lake-fringe on a lake **with** disturbance and there are 3 other lake-fringe wetland within ½ mile points = 3 There is at least 1 wetland within ½ mile. points = 2 There are no wetlands within ½ mile. points = 0	3
H 2. TOTAL Score - opportunity for providing habitat *Add the scores from H2.1,H2.2, H2.3, H2.4*	8
TOTAL for H 1 from page 14	16
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	24

Wetland name or number ~~A~~ D

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.*	**Category**
SC 1.0 Estuarine wetlands *(see p. 86)* Does the wetland unit meet the following criteria for Estuarine wetlands? — The dominant water regime is tidal, — Vegetated, and — With a salinity greater than 0.5 ppt. YES = Go to SC 1.1 NO /	
SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? YES = Category I NO go to SC 1.2	**Cat. I**
SC 1.2 Is the wetland unit at least 1 acre in size and meets at least two of the following three conditions? YES = Category I NO = Category II — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp. are the only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category I. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual rating I/II**

Wetland name or number ~~A~~ D

SC 2.0 Natural Heritage Wetlands *(see p. 87)* Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland unit being rated in a Section/Township/Range that contains a Natural Heritage wetland? *(this question is used to screen out most sites before you need to contact WNHP/DNR)* S/T/R information from Appendix D ✓ or accessed from WNHP/DNR web site ___ YES____ – contact WNHP/DNR (see p. 79) and go to SC 2.2 NO ✓ SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as or as a site with state threatened or endangered plant species? YES = Category I NO ____not a Heritage Wetland	**Cat. I**
SC 3.0 Bogs *(see p. 87)* Does the wetland unit (**or any part of the unit**) meet both the criteria for soils and vegetation in bogs? *Use the key below to identify if the wetland is a bog.* ***If you answer yes you will still need to rate the wetland based on its functions.*** 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 the soil profile? (See Appendix B for a field key to identify organic soils)? Yes - go to Q. 3 ✓ No - go to Q. 2 2. Does the unit 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 Q. 3 ✓ No - Is not a bog for purpose of rating 3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? Yes – Is a bog for purpose of rating No - go to Q. 4 NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog. *1.* 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)?* 2. YES = Category I No___ Is not a bog for purpose of rating	**Cat. I**

Wetland name or number A D

SC 4.0 Forested Wetlands *(see p. 90)* Does the wetland unit have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? *If you answer yes you will still need to rate the wetland based on its functions.* — **Old-growth forests**: (west of Cascade crest) Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/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 average diameters (dbh) exceeding 21 inches (53cm); crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth. YES = Category I NO X not a forested wetland with special characteristics	**Cat. I**
SC 5.0 Wetlands in Coastal Lagoons *(see p. 91)* Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? — The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks — The lagoon in which the wetland is located contains surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)* YES = Go to SC 5.1 NO X not a wetland in a coastal lagoon SC 5.1 Does the wetland meets 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 ¾ 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 feet) YES = Category I NO = Category II	**Cat. I** **Cat. II**

Attachment 14

Wetland name or number A D

SC 6.0 Interdunal Wetlands *(see p. 93)* Is the wetland unit west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? YES - go to SC 6.1 NO X not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its functions.*** In practical terms that means the following geographic areas: • Long Beach Peninsula- lands west of SR 103 • Grayland-Westport- lands west of SR 105 • Ocean Shores-Copalis- lands west of SR 115 and SR 109 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is once acre or larger? YES = Category II NO – go to SC 6.2 SC 6.2 Is the unit between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III	**Cat. II** **Cat. III**
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	

Appendix E
Important Information About Your Wetland Delineation/Mitigation and/or Stream Classification Report

This page intentionally left blank.

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Attachment to and part of Report 21-1-12317-001
Attachment 14

Date: June 16, 2011
To: Paul Krawczyk
City of Bellevue

IMPORTANT INFORMATION ABOUT YOUR WETLAND DELINEATION/MITIGATION AND/OR STREAM CLASSIFICATION REPORT

A WETLAND/STREAM REPORT IS BASED ON PROJECT-SPECIFIC FACTORS.

Wetland delineation/mitigation and stream classification reports are based on a unique set of project-specific factors. These typically include the general nature of the project and property involved, its size, and its configuration; historical use and practice; the location of the project on the site and its orientation; and the level of additional risk the client assumed by virtue of limitations imposed upon the exploratory program. The jurisdiction of any particular wetland/stream is determined by the regulatory authority(s) issuing the permit(s). As a result, one or more agencies will have jurisdiction over a particular wetland or stream with sometimes confusing regulations. It is necessary to involve a consultant who understands which agency(s) has jurisdiction over a particular wetland/stream and what the agency(s) permitting requirements are for that wetland/stream. To help reduce or avoid potential costly problems, have the consultant determine how any factors or regulations (which can change subsequent to the report) may affect the recommendations.

Unless your consultant indicates otherwise, your report should not be used:

- If the size or configuration of the proposed project is altered.
- If the location or orientation of the proposed project is modified.
- If there is a change of ownership.
- For application to an adjacent site.
- For construction at an adjacent site or on site.
- Following floods, earthquakes, or other acts of nature.

Wetland/stream consultants cannot accept responsibility for problems that may develop if they are not consulted after factors considered in their reports have changed. Therefore, it is incumbent upon you to notify your consultant of any factors that may have changed prior to submission of our final report.

Wetland boundaries identified and stream classifications made by Shannon & Wilson are considered preliminary until validated by the U.S. Army Corps of Engineers (Corps) and/or the local jurisdictional agency. Validation by the regulating agency(s) provides a certification, usually written, that the wetland boundaries verified are the boundaries that will be regulated by the agency(s) until a specified date, or until the regulations are modified, and that the stream has been properly classified. Only the regulating agency(s) can provide this certification.

MOST WETLAND/STREAM "FINDINGS" ARE PROFESSIONAL ESTIMATES.

Site exploration identifies wetland/stream conditions at only those points where samples are taken and when they are taken, but the physical means of obtaining data preclude the determination of precise conditions. Consequently, the information obtained is intended to be sufficiently accurate for design, but is subject to interpretation. Additionally, data derived through sampling and subsequent laboratory testing are extrapolated by the consultant who then renders an opinion about overall conditions, the likely reaction to proposed construction activity, and/or appropriate design. Even under optimal circumstances, actual conditions may differ from those thought to exist because no consultant, no matter how qualified, and no exploration program, no matter how comprehensive, can reveal what is hidden by earth, rock, and time. Nothing can be done to prevent the unanticipated, but steps can be taken to help reduce their impacts. For this reason, most experienced owners retain their consultants through the construction or wetland mitigation/stream classification stage to identify variances, to conduct additional evaluations that may be needed, and to recommend solutions to problems encountered on site.

WETLAND/STREAM CONDITIONS CAN CHANGE.

Since natural systems are dynamic systems affected by both natural processes and human activities, changes in wetland boundaries and stream conditions may be expected. Therefore, delineated wetland boundaries and stream classifications cannot remain valid for an indefinite period of time. The Corps typically recognizes the validity of wetland delineations for a period of five years after completion. Some city and county agencies recognize the validity of wetland delineations for a period of two years. If a period of years have passed since the wetland/stream report was completed, the owner is advised to have the consultant reexamine the wetland/stream to determine if the classification is still accurate.

Construction operations at or adjacent to the site and natural events such as floods, earthquakes, or water fluctuations may also affect conditions and, thus, the continuing adequacy of the wetland/stream report. The consultant should be kept apprised of any such events and should be consulted to determine if additional evaluation is necessary.

THE WETLAND/STREAM REPORT IS SUBJECT TO MISINTERPRETATION.

Costly problems can occur when plans are developed based on misinterpretation of a wetland/stream report. To help avoid these problems, the consultant should be retained to work with other appropriate professionals to explain relevant wetland, stream, geological, and other findings, and to review the adequacy of plans and specifications relative to these issues.

DATA FORMS SHOULD NOT BE SEPARATED FROM THE REPORT.

Final data forms are developed by the consultant based on interpretation of field sheets (assembled by site personnel) and laboratory evaluation of field samples. Only final data forms customarily are included in a report. These data forms should not, under any circumstances, be drawn for inclusion in other drawings because drafters may commit errors or omissions in the transfer process. Although photographic reproduction eliminates this problem, it does nothing to reduce the possibility of misinterpreting the forms. When this occurs, delays, disputes, and unanticipated costs are frequently the result.

To reduce the likelihood of data form misinterpretation, contractors, engineers, and planners should be given ready access to the complete report. Those who do not provide such access may proceed under the mistaken impression that simply disclaiming responsibility for the accuracy of information always insulates them from attendant liability. Providing the best available information to contractors, engineers, and planners helps prevent costly problems and the adversarial attitudes that aggravate them to a disproportionate scale.

READ RESPONSIBILITY CLAUSES CLOSELY.

Because a wetland delineation/stream classification is based extensively on judgment and opinion, it is far less exact than other design disciplines. This situation has resulted in wholly unwarranted claims being lodged against consultants. To help prevent this problem, consultants have developed a number of clauses for use in written transmittals. These are not exculpatory clauses designed to foist the consultant's liabilities onto someone else; rather, they are definitive clauses that identify where the consultant's responsibilities begin and end. Their use helps all parties involved recognize their individual responsibilities and take appropriate action. Some of these definitive clauses are likely to appear in your report, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to your questions.

THERE MAY BE OTHER STEPS YOU CAN TAKE TO REDUCE RISK.

Your consultant will be pleased to discuss other techniques or designs that can be employed to mitigate the risk of delays and to provide a variety of alternatives that may be beneficial to your project.

Contact your consultant for further information.