

Routine Wetland Determination

23.4 R1

DATA FORM 1 (Revised)

WA State Wetland Delineation Manual or 1987 Corps Wetland Delineation Manual

Project/Site: 405 520 to I-5 Applicant/owner: WDOT Investigator(s): C. Douglas; S. Purstley	Date: 4/4/07 County: King State: WA S/T/R: 20/26N/5E
Do normal circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (atypical situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is the area a potential problem area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Explanation of atypical or problem area:	Community ID: - Transect ID: - Plot ID: SPT # 1 (w)

VEGETATION (For *strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	*Stratum	% cover	Indicator	Dominant Plant Species	*Stratum	% cover	Indicator
THUPLI	T	40	FAC	LYS ANNE	H	40	ORC
ACE MAC	T	40	FACV	ATH FEM	H	30	FAC
RUBSBE	S	60	FACV				
RIB	S	5					

HYDROPHYTIC VEGETATION INDICATORS: $40/80 = 50\%$, $5 = 60/60 = 100\%$, $H = 70/70 = 100\%$
 % of dominants OBL, FACW, & FAC: $170/210 = 81\%$

Check all indicators that apply and explain below:

- | | |
|---|---|
| <input checked="" type="checkbox"/> Visual observation of plant species growing in areas of prolonged inundation/saturation | <input type="checkbox"/> Physiological/reproductive adaptations |
| <input type="checkbox"/> Morphological adaptations | <input checked="" type="checkbox"/> Wetland plant database |
| <input checked="" type="checkbox"/> Technical Literature | <input type="checkbox"/> Personal knowledge of regional plant communities |
| | <input checked="" type="checkbox"/> Other (explain) |

Hydrophytic vegetation present? Yes No

Rationale for decision/Remarks: 81% Dom. FAC. VEG

HYDROLOGY

Is it the growing season? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Based on: <input type="checkbox"/> Soil temp (record temp) <input checked="" type="checkbox"/> Other (explain) Aggs	Water Marks: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No on Drift Lines: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Sediment Deposits: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Drainage Patterns: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Depth of inundation: 0 inches Depth to free water in pit: 12" Depth to saturated soil: @ Surface	Oxidized Root (live roots) Channels <12in.: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No FAC Neutral: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Local Soil Survey: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Water-stained Leaves: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Check all that apply & explain below: <input type="checkbox"/> Stream, lake or gage data <input type="checkbox"/> Aerial photographs <input type="checkbox"/> Other	Other (explain):	

Wetland hydrology present? Yes No

Rationale for decision/remarks: Saturation & Standing Water.

SOILS

Map Unit Name (Series and Phase):

Kittap Silt loam
Taxonomy (subgroup)

Drainage Class

Field observations confirm mapped type? Yes No**Profile Description**

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size and contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-5"		10YR2/1	—	—	Silt loam	
5-18 1/4"		G1S/N	10YR2 5/6	C, m, p	Loam	

Hydric Soil Indicators: (check all that apply)

- | | |
|--|---|
| <input type="checkbox"/> Histosol | <input type="checkbox"/> Matrix chroma ≤ 2 with mottles |
| <input type="checkbox"/> Histic Epipedon | <input type="checkbox"/> Mg or Fe Concretions |
| <input type="checkbox"/> Sulfidic Odor | <input type="checkbox"/> High Organic Content in Surface Layer of Sandy Soils |
| <input type="checkbox"/> Aquic Moisture Regime | <input type="checkbox"/> Organic Streaking in Sandy Soils |
| <input type="checkbox"/> Reducing Conditions | <input type="checkbox"/> Listed on National/Local Hydric Soils List |
| <input checked="" type="checkbox"/> Gleyed or Low-Chroma (≥ 1) matrix | <input type="checkbox"/> Other (explain in remarks) |

Hydric soils present? Yes No

Rationale for decision/Remarks:

Low chroma

Wetland Determination

- | | | |
|---|---|-----------------------------|
| Hydrophytic vegetation present? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No |
| Hydric soils present? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No |
| Wetland hydrology present? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No |
| Is the sampling point within a wetland? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No |

Rationale/Remarks:

3 of 3 parameters

NOTES:

16 Flags

Wetland on slope down to historic road bed, becomes narrow channel with flowing water during site visit. Hydrology dominated by seeps.

Revised 4/97

Routine Wetland Determination

DATA FORM 1 (Revised)

W 23,402

WA State Wetland Delineation Manual or 1987 Corps Wetland Delineation Manual

Project/Site: <u>405 S20 to J5</u> Applicant/owner: <u>WSDOT</u> Investigator(s): <u>C. Douglas, J. Presley</u>	Date: <u>4/4/07</u> County: <u>King</u> State: <u>WA</u> S/T/R: <u>20/26N/5E</u>
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Do normal circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (atypical situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is the area a potential problem area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Explanation of atypical or problem area:	Community ID: <u>—</u> Transect ID: <u>—</u> Plot ID: <u>S#2 (up)</u>
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VEGETATION (For *strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	*Stratum	% cover	Indicator	Dominant Plant Species	*Stratum	% cover	Indicator
<u>TITUBLI</u>	<u>T</u>	<u>40</u>	<u>FAC</u>	<u>POLOMUN</u>	<u>H</u>	<u>40</u>	<u>FACV</u>
<u>ACERMAC</u>	<u>T</u>	<u>50</u>	<u>FACV</u>	<u>ATTAFEM</u>	<u>A</u>	<u>5</u>	<u>FAC</u>
<u>ORONCEB</u>	<u>S</u>	<u>50</u>	<u>FACV</u>				
<u>CORCOR</u>	<u>S</u>	<u>10</u>	<u>FACV</u>				
<u>RUBSPE</u>	<u>S</u>	<u>10</u>	<u>FACV</u>				
<u>RSB</u>	<u>S</u>	<u>10</u>					

HYDROPHYTIC VEGETATION INDICATORS: $T = 40/90 = 44\%$, $S = 0/50 = 0\%$, $H = 0/40 = 0\%$
 % of dominants OBL, FACW, & FAC: $40/180 = 22\%$

Check all indicators that apply and explain below:

<input type="checkbox"/> Visual observation of plant species growing in areas of prolonged inundation/saturation	<input type="checkbox"/> Physiological/reproductive adaptations
<input type="checkbox"/> Morphological adaptations	<input checked="" type="checkbox"/> Wetland plant database
<input checked="" type="checkbox"/> Technical Literature	<input checked="" type="checkbox"/> Personal knowledge of regional plant communities
	<input type="checkbox"/> Other (explain)

Hydrophytic vegetation present? Yes No
 Rationale for decision/Remarks: 22% Dom. WET. VEG

HYDROLOGY

Is it the growing season? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Based on: <input type="checkbox"/> Soil temp (record temp) <input checked="" type="checkbox"/> Other (explain) <u>April</u>	Water Marks: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No on Drift Lines: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Sediment Deposits: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Drainage Patterns: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Depth of inundation: <u>∅</u> inches Depth to free water in pit: <u>∅ to 18"</u> Depth to saturated soil: <u>∅ to 18"</u>	Oxidized Root (live roots) Channels <12in.: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No FAC Neutral: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Local Soil Survey: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Water-stained Leaves: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Check all that apply & explain below: <input type="checkbox"/> Stream, lake or gage data <input type="checkbox"/> Aerial photographs <input type="checkbox"/> Other	Other (explain):	

Wetland hydrology present? Yes No
 Rationale for decision/remarks: No Hydric Features

SOILS

Map Unit Name (Series and Phase):

KITJep Sst loam 15 to 30%
Taxonomy (subgroup) Sstber

Drainage Class

Field observations confirm mapped type? Yes No

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size and contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-8"		10YR 3/4	—	—	Sandy loam	
8-10"+		10YR 4/4	—	—	Sandy loam	

Hydric Soil Indicators: (check all that apply)

- Histosol
- Histic Epipedon
- Sulfidic Odor
- Aquic Moisture Regime
- Reducing Conditions
- Gleyed or Low-Chroma (=1) matrix
- Matrix chroma ≤ 2 with mottles
- Mg or Fe Concretions
- High Organic Content in Surface Layer of Sandy Soils
- Organic Streaking in Sandy Soils
- Listed on National/Local Hydric Soils List
- Other (explain in remarks)

Hydric soils present?

Yes No

Rationale for decision/Remarks:

no Hydric features

Wetland Determination

Hydrophytic vegetation present?

Yes No

Hydric soils present?

Yes No

Wetland hydrology present?

Yes No

Is the sampling point within a wetland?

Yes No

Rationale/Remarks:

2 of 3 parameters

NOTES:

Revised 4/97



Wetland name or number 23.4R

WETLAND RATING FORM – WESTERN WASHINGTON
Version 2 – Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): 23.4R Date of site visit: 4/4/07

Rated by: C. Douglas, S. Purdy Trained by Ecology? Yes No Date of training:

SEC: 20 TOWNSHIP: 26N RANGE: 5E Is S/T/R in Appendix D? Yes No

Map of wetland unit: Figure Estimated size

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
Score for Hydrologic Functions
Score for Habitat Functions
TOTAL Score for Functions

<u>2</u>
<u>6</u>
<u>18</u>
<u>26</u>

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

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

IV

Summary of basic information about the wetland unit.

Wetland Unit has Special Characteristics		Wetland HGM Class used for Rating	
Estuarine		Depressional	
Natural Heritage Wetland		Riverine	
Bog		Lake-fringe	
Mature Forest		Slope	<input checked="" type="checkbox"/>
Old Growth Forest		Flats	
Coastal Lagoon		Freshwater Tidal	
Interdunal			
None of the above		Check if unit has multiple HGM classes present	<input type="checkbox"/>

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

Check List for Wetlands that Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1. Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered animal or plant species (T/E species)? For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		<input checked="" type="checkbox"/>
SP2. Has the wetland unit been documented as habitat for any State listed Threatened or Endangered animal species? For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category 1 Natural Heritage Wetlands (see p. 19 of data form).		<input checked="" type="checkbox"/>
SP3. Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?		<input checked="" type="checkbox"/>
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.		<input checked="" type="checkbox"/>

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

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

Wetland name or number 23.40

Classification of Vegetated Wetlands for Western Washington

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

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

NO - go to 2

YES - the wetland class is **Tidal Fringe**

If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?

YES - **Freshwater Tidal Fringe**

NO - **Saltwater Tidal Fringe (Estuarine)**

If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is a Saltwater Tidal Fringe it is rated as an **Estuarine** wetland. Wetlands that were 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 only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.

NO - go to 3

YES - The wetland class is **Flats**

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

3. Does the entire wetland meet both of the following criteria?

The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) where at least 20 acres (8ha) in size;

At least 30% of the open water area is deeper than 6.6 (2 m)?

NO - go to 4

YES - The wetland class is **Lake-fringe (Lacustrine Fringe)**

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

The wetland is on a slope (*slope can be very gradual*).

The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.

The water leaves the wetland **without being impounded?**

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

NO - go to 5

YES - The wetland class is **Slope**

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

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

The overbank flooding occurs at least once every two years.

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

NO - go to 6

YES - The wetland class is **Riverine**

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

NO - go to 7

YES - The wetland class is **Depressional**

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

No - go to 8

YES - The wetland class is **Depressional**

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

HGM Classes within the wetland unit being rated	HGM Class to Use in Rating
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

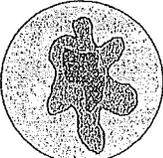
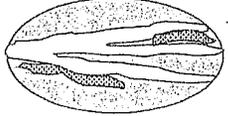
If you are unable still to determine which of the above criteria apply to your wetland, or you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.

Wetland name or number 23.4R

S Slope Wetlands		Points
WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.		(only 1 score per box) (see p.64)
S 1	Does the wetland have the potential to improve water quality?	
S 1.1	Characteristics of average slope of unit: <ul style="list-style-type: none"> Slope is 1% or less (a 1% slope has a 1 ft. vertical drop in elevation for every 100 ft. horizontal distance)..... points = 3 Slope is 1% - 2% points = 2 Slope is 2% - 5% points = 1 Slope is greater than 5% points = 0 	0
S 1.2	The soil 2 inches below the surface (or duff layer) is clay, organic (Use NRCS definitions). YES = 3 points NO = 0 points	0
S 1.3	Characteristics of the vegetation in the wetland that trap sediments and pollutants: Choose the points appropriate for the description that best fits the vegetation in the wetland. Dense vegetation means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 inches. <ul style="list-style-type: none"> Dense, uncut, herbaceous vegetation > 90% of the wetland area points = 6 Dense, uncut, herbaceous vegetation > 1/2 of area points = 3 Dense, woody, vegetation > 1/2 of area points = 2 Dense, uncut, herbaceous vegetation > 1/4 of area points = 1 Does not meet any of the criteria above for vegetation points = 0 Aerial photo or map with vegetation polygons	Figure <u>1</u>
Total for S 1 Add the points in the boxes above		<u>3</u>
S 2	Does the wetland have the opportunity to improve water quality? Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity. <input type="checkbox"/> Grazing in the wetland or within 150 ft <input type="checkbox"/> Untreated stormwater discharges to wetland <input checked="" type="checkbox"/> Filled fields, logging, or orchards within 150 ft. of wetland <input type="checkbox"/> Residential, urban areas, or golf courses are within 150 ft. upslope of wetland <input type="checkbox"/> Other YES multiplier is 2 NO multiplier is 1	(see p. 67) Multiplier <u>2</u>
◆	TOTAL – Water Quality Functions Multiply the score from S1 by S2; then add score to table on p. 1	<u>2</u>
HYDROLOGIC FUNCTIONS – Indicators that wetland functions to reduce flooding and stream erosion.		
S 3	Does the wetland have the potential to reduce flooding and stream erosion?	(see p.68)
S 3.1	Characteristics of vegetation that reduce the velocity of surface flows during storms: Choose the points appropriate for the description that best fits conditions in the wetland (stems of plants should be thick enough (usually > 1/8in), or dense enough to remain erect during surface flows). <ul style="list-style-type: none"> Dense, uncut, rigid vegetation covers > 90% of the area of the wetland..... points = 6 Dense, uncut, rigid vegetation > 1/2 area of wetland points = 3 Dense, uncut, rigid vegetation > 1/4 area..... points = 1 More than 1/4 of area is grazed, mowed, tilled, or vegetation is not rigid..... points = 0 	1
S 3.2	Characteristics of slope wetland that holds back small amounts of flood flows. The slope has small surface depressions that can retain water over at least 10% of its area. YES = 2 points NO = 0 points	2
Add the points in the boxes above		<u>3</u>
S 4	Does the wetland have the opportunity to reduce flooding and erosion? Is the wetland in a landscape position where the reduction in water velocity it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows? Note which of the following conditions apply. <input type="checkbox"/> Wetland has surface runoff that drains to a river or stream that has flooding problems <input type="checkbox"/> Other (Answer NO if the major source of water is controlled by a reservoir (e.g. wetland is a seep that is on the downstream side of a dam) YES multiplier is 2 NO multiplier is 1	(see p. 70) Multiplier <u>2</u>
◆	TOTAL – Hydrologic Functions Multiply the score from S3 by S4; then add score to table on p. 1	<u>6</u>

Comments:

Wetland name or number 23.40

<i>These questions apply to wetlands of all HGM classes.</i> HABITAT FUNCTIONS – Indicators that wetland functions to provide important habitat.		Points (only 1 score per box)								
H 1	Does the wetland 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 1/4 acre or more than 10% of the area if unit is smaller than 2.5 acres. <input checked="" type="checkbox"/> Aquatic Bed <input checked="" type="checkbox"/> Emergent plants <input checked="" type="checkbox"/> Scrub/shrub (areas where shrubs have > 30% cover) <input checked="" type="checkbox"/> Forested (areas where trees have > 30% cover) If the unit has a forested class check if: <input type="checkbox"/> The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon. Add the number of vegetation types that qualify. If you have: <table style="float: right; border: 1px solid black; border-radius: 10px; padding: 5px;"> <tr> <td>4 structures or more.....</td> <td>points = 4</td> </tr> <tr> <td>2 structures.....</td> <td>points = 1</td> </tr> </table> Map of Cowardin vegetation classes <table style="float: right; border: 1px solid black; border-radius: 10px; padding: 5px;"> <tr> <td>3 structures.....</td> <td>points = 2</td> </tr> <tr> <td>1 structure.....</td> <td>points = 0</td> </tr> </table>	4 structures or more.....	points = 4	2 structures.....	points = 1	3 structures.....	points = 2	1 structure.....	points = 0	Figure ___ <div style="font-size: 2em; text-align: center;">2</div>
4 structures or more.....	points = 4									
2 structures.....	points = 1									
3 structures.....	points = 2									
1 structure.....	points = 0									
	H 1.2 Hydroperiods (see p.73): Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or 1/4 acre to count (see text for descriptions of hydroperiods). <input checked="" type="checkbox"/> Permanently flooded or inundated <input checked="" type="checkbox"/> Seasonally flooded or inundated <input checked="" type="checkbox"/> Occasionally flooded or inundated <input checked="" type="checkbox"/> Saturated only <input type="checkbox"/> Permanently flowing stream or river in, or adjacent to, the wetland <input type="checkbox"/> Seasonally flowing stream in, or adjacent to, the wetland <input type="checkbox"/> Lake-fringe wetland..... = 2 points <input type="checkbox"/> Freshwater tidal wetland..... = 2 points Map of hydroperiods <table style="float: right; border: 1px solid black; border-radius: 10px; padding: 5px;"> <tr> <td>4 or more types present</td> <td>points = 3</td> </tr> <tr> <td>3 or more types present</td> <td>points = 2</td> </tr> <tr> <td>2 types present.....</td> <td>points = 1</td> </tr> <tr> <td>1 type present.....</td> <td>points = 0</td> </tr> </table>	4 or more types present	points = 3	3 or more types present	points = 2	2 types present.....	points = 1	1 type present.....	points = 0	Figure ___ <div style="font-size: 2em; text-align: center;">2</div>
4 or more types present	points = 3									
3 or more types present	points = 2									
2 types present.....	points = 1									
1 type present.....	points = 0									
	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: <table style="float: right; border: 1px solid black; border-radius: 10px; padding: 5px;"> <tr> <td>> 19 species.....</td> <td>points = 2</td> </tr> <tr> <td>5 – 19 species.....</td> <td>points = 1</td> </tr> <tr> <td>< 5 species.....</td> <td>points = 0</td> </tr> </table> List species below if you want to: _____ _____ _____	> 19 species.....	points = 2	5 – 19 species.....	points = 1	< 5 species.....	points = 0	Figure ___ <div style="font-size: 2em; text-align: center;">1</div>		
> 19 species.....	points = 2									
5 – 19 species.....	points = 1									
< 5 species.....	points = 0									
	H 1.4 Interspersion of Habitats (see p. 76): Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none. <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  None = 0 points </div> <div style="text-align: center;">  Low = 1 point </div> <div style="text-align: center;">  Moderate = 2 points </div> <div style="text-align: center;">  High = 3 points </div> </div> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  [riparian braided channels] </div> <div style="border: 1px solid black; padding: 5px;"> Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always "high". Use map of Cowardin classes. </div> </div>	Figure ___ <div style="font-size: 2em; text-align: center;">2</div>								
	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. <input checked="" type="checkbox"/> Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft. long) <input checked="" type="checkbox"/> Standing snags (diameter at the bottom > 4 inches) in the wetland <input type="checkbox"/> Undercut banks are present for at least 6.6 ft. (2m) and/or overhanging vegetation extends at least 3.3 ft. (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft. (10m) <input type="checkbox"/> Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present (cut shrubs or trees that have not yet turned grey/brown) <input checked="" type="checkbox"/> At least 1/4 acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated (structures for egg-laying by amphibians) <input type="checkbox"/> Invasive plants cover less than 25% of the wetland area in each stratum of plants NOTE: The 20% stated in early printings of the manual on page 78 is an error.	Figure ___ <div style="font-size: 2em; text-align: center;">3</div>								
H 1 TOTAL Score – potential for providing habitat		Add the points in the column above								
		<div style="font-size: 2em;">0</div>								

	<p>H 2.3 <u>Near or adjacent to other priority habitats listed by WDFW</u> (see p. 82): Which of the following priority habitats are within 330 ft. (100m) of the wetland? <i>NOTE: the connections do not have to be relatively undisturbed. These are DFW definitions. Check with your local DFW biologist if there are any questions.</i></p> <p>___ Riparian: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.</p> <p>___ Aspen Stands: Pure or mixed stands of aspen greater than 0.8 ha (2 acres)</p> <p>___ Cliffs: Greater than 7.6m (25 ft) high and occurring below 5000 ft.</p> <p>___ Old-growth 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.</p> <p>___ Mature forests: Stands with average diameters exceeding 53cm (21 in) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 – 200 years old west of the Cascade Crest.</p> <p>___ Prairies: Relatively undisturbed areas (as indicated by dominance of native plants) where greases and/or forbs form the natural climax plant community.</p> <p>___ Talus: Homogenous areas of rock rubble ranging in average size 0.15 – 2.0m (0.5 – 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.</p> <p>___ Caves: A naturally occurring cavity, recess, void, or system of interconnected passages.</p> <p>___ Oregon white Oak: Woodlands stands of pure oak or oak/conifer associations where canopy coverage of the oak component of the stand is 25%.</p> <p>___ Urban Natural Open Space: A priority species resides within or is adjacent to the open space and uses it for breeding and/or regular feeding; and/or the open space functions as a corridor connecting other <i>priority habitats</i>, especially those that would otherwise be isolated; and/or the open space is an isolated remnant of natural habitat larger than 4 ha (10 acres) and is surrounded by urban development.</p> <p>___ Estuary/Estuary-like: Deepwater tidal habitats and adjacent tidal wetlands, usually semi-enclosed by land but with open, partly obstructed or sporadic access to the open ocean, and in which ocean water is at least occasionally diluted by freshwater runoff from the land. The salinity may be periodically increased above that of the open ocean by evaporation. Along some low-energy coastlines there is appreciable dilution of sea water. Estuarine habitat extends upstream and landward to where ocean-derived salts measure less than 0.5 ppt. during the period of average annual low flow. Includes both estuaries and lagoons.</p> <p>___ Marine/Estuarine Shorelines: Shorelines include the intertidal and subtidal zones of beaches, and may also include the backshore and adjacent components of the terrestrial landscape (e.g., cliffs, snags, mature trees, dunes, meadows) that are important to shoreline associated fish and wildlife and that contribute to shoreline function (e.g., sand/rock/log recruitment, nutrient contribution, erosion control).</p> <p>If wetland has 3 or more priority habitats = 4 points If wetland has 1 priority habit ...= 1 point If wetland has 2 priority habitats= 3 points 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).</p>	
	<p>H 2.4 <u>Wetland Landscape:</u> Choose the one description of the landscape around the wetland that best fits (see p. 84)</p> <ul style="list-style-type: none"> • There are at least 3 other wetlands within 1/2 mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development..... (points = 5) • The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within 1/2 mile points = 5 • There are at least 3 other wetlands within 1/2 mile, BUT the connections between them are disturbed. points = 3 • The wetland fringe on a lake with disturbance and there are 3 other lake-fringe wetlands within 1/2 mile points = 3 • There is at least 1 wetland within 1/2 mile points = 2 • There are no wetlands within 1/2 mile points = 0 	
	<p>H 2 TOTAL Score – opportunity for providing habitat Add the scores from H2.1, H2.2, H2.3, H2.4</p>	<p>10</p>
		<p>TOTAL for H 1 from page 8</p>
	<p>◆ Total Score for Habitat Functions Add the points for H 1 and H 2; then record the result on p. 1</p>	<p>13</p>

Comments:

Wetland name or number 23.48

H 2	Does the wetland have the <u>opportunity</u> to provide habitat for many species?	(only 1 score per box)
	<p>H 2.1 <u>Buffers</u> (see P. 80): <i>Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed".</i></p> <p><input type="checkbox"/> 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% of circumference. No structures are within the undisturbed part of buffer (relatively undisturbed also means no grazing, no landscaping, no daily human use).. points = 5</p> <p><input checked="" type="checkbox"/> 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference..... points = 4</p> <p><input type="checkbox"/> 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference..... points = 4</p> <p><input type="checkbox"/> 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference..... points = 3</p> <p><input type="checkbox"/> 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference points = 3</p> <p>If buffer does not meet any of the criteria above:</p> <p><input type="checkbox"/> No paved areas (except paved trails) or buildings within 25m (80 ft) of wetland > 95% circumference. Light to moderate grazing or lawns are OK..... points = 2</p> <p><input type="checkbox"/> No paved areas of buildings within 50m of wetland for > 50% circumference. Light to moderate grazing or lawns are OK..... points = 2</p> <p><input type="checkbox"/> Heavy grazing in buffer points = 1</p> <p><input type="checkbox"/> Vegetated buffers are < 2m wide (6.6 ft) for more than 95% circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland)..... points = 0</p> <p><input type="checkbox"/> Buffer does not meet any of the criteria above points = 1</p> <p style="text-align: right;">Arial photo showing buffers</p>	<p>Figure _____</p> <p style="text-align: center; font-size: 2em;">3</p>
	<p>H 2.2 <u>Corridors and Connections</u> (see p. 81)</p> <p>H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft. wide, has at least a 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (<i>Dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor.</i>)</p> <p style="text-align: center;">YES = 4 points (go to H 2.3) NO = go to H 2.2.2</p> <p>H. 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50 ft. wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? OR a Lake-fringe wetland, if it does not have an undisturbed corridor as in the question above?</p> <p style="text-align: center;">YES = 2 points (go to H 2.3) NO = go to H 2.2.3</p> <p>H. 2.2.3 Is the wetland:</p> <ul style="list-style-type: none"> • Within 5 mi (8km) of a brackish or salt water estuary OR • Within 3 miles of a large field or pasture (> 40 acres) OR • Within 1 mile of a lake greater than 20 acres? <p style="text-align: right;">YES = 1 point NO = 0 points</p>	<p style="text-align: center; font-size: 2em;">X</p>

Comments:

Wetland name or number 23.7R

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

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

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

Wetland name or number 23.4R

SC4	<p>Forested Wetlands (see p. 90)</p> <p>Does the wetland have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? <i>If you answer yes you will still need to rate the wetland based on its function.</i></p> <p>___ Old-growth forests: (west of Cascade Crest) Stands of at least two three species forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm or more).</p> <p>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.</p> <p>___ Mature forests: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have an average diameters (dbh) exceeding 21 inches (53 cm); crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth.</p> <p>YES = Category I NO = <u> </u> not a forested wetland with special characteristics</p>	Cat. I
SC5	<p>Wetlands in Coastal Lagoons (see p. 91)</p> <p>Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?</p> <p>___ 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.</p> <p>___ The lagoon in which the wetland is located contains surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon (<i>needs to be measured near the bottom.</i>)</p> <p>YES = Go to SC 5.1 NO = <u> </u> not a wetland in a coastal lagoon</p> <p>SC 5.1 Does the wetland meet all of the following three conditions?</p> <p>___ 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).</p> <p>___ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland.</p> <p>___ The wetland is larger than 1/10 acre (4350 square ft.)</p> <p>YES = Category I NO = Category II</p>	Cat. I Cat. II
SC6	<p>Interdunal Wetlands (see p. 93)</p> <p>Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)?</p> <p>YES = Go to SC 6.1 NO = <u> </u> not an interdunal wetland for rating</p> <p><i>If you answer yes you will still need to rate the wetland based on its functions.</i></p> <p>In practical terms that means the following geographic areas:</p> <ul style="list-style-type: none"> • Long Beach Peninsula -- lands west of SR 103 • Grayland-Westport -- lands west of SR 105 • Ocean Shores-Copalis – lands west of SR 115 and SR 109 <p>SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is one acre or larger?</p> <p>YES = Category II NO = go to SC 6.2</p> <p>SC 6.2 Is the wetland between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre?</p> <p>YES = Category III</p>	Cat. II Cat. III
◆	<p>Category of wetland based on Special Characteristics</p> <p>Choose the "highest" rating if wetland falls into several categories, and record on p. 1.</p> <p>If you answered NO for all types enter "Not Applicable" on p. 1</p>	NA

Comments:

Routine Wetland Determination

W 23.5R

DATA FORM 1 (Revised)

WA State Wetland Delineation Manual or 1987 Corps Wetland Delineation Manual)

Project/Site: 405 520 to I-5 Applicant/owner: WOODT Investigator(s): C. Douglas, S. Purkey	Date: 4/4/07 County: King State: WA S/T/R: 20/26N/5E
Do normal circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (atypical situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is the area a potential problem area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Explanation of atypical or problem area:	Community ID: - Transect ID: - Plot ID: SP#1 (WET)

VEGETATION (For *strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	*Stratum	% cover	Indicator	Dominant Plant Species	*Stratum	% cover	Indicator
ALNRWB	T	40	FAC	TOLMEN	H	20	FAC
THUPLR	T	5	FAC	LYSAME	H	40	OBL
ACE CSR	T	20	FAC	→ rooted outside wetland			
ACE MAC	T	30	FACV	→ rooted outside wetland			
RUB SPE	S	30	FAC	ATT FEM	H	30	FAC
RUB ARM	S	20	FACV				

HYDROPHYTIC VEGETATION INDICATORS: T = 40/90 = 44% S = 30/50 = 60% H = 90/90 = 100%

% of dominants OBL, FACW, & FAC: 160/230 = 70%

Check all indicators that apply and explain below:

<input checked="" type="checkbox"/> Visual observation of plant species growing in areas of prolonged inundation/saturation	<input type="checkbox"/> Physiological/reproductive adaptations
<input type="checkbox"/> Morphological adaptations	<input checked="" type="checkbox"/> Wetland plant database
<input checked="" type="checkbox"/> Technical Literature	<input type="checkbox"/> Personal knowledge of regional plant communities
	<input type="checkbox"/> Other (explain)

Hydrophytic vegetation present? Yes No

Rationale for decision/Remarks: 70% Dom FAC VEG, (FACV trees rooted outside wetland)

HYDROLOGY

Is it the growing season? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Water Marks: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No on	Sediment Deposits: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Based on: <input type="checkbox"/> Soil temp (record temp) <input checked="" type="checkbox"/> Other (explain) April	Drift Lines: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Drainage Patterns: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Depth of inundation: 0 inches	Oxidized Root (live roots) Channels <12in.: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Local Soil Survey: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Depth to free water in pit: 10''	FAC Neutral: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Water-stained Leaves: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Depth to saturated soil: @ surface	Other (explain):	
Check all that apply & explain below: <input type="checkbox"/> Stream, lake or gage data <input type="checkbox"/> Aerial photographs <input type="checkbox"/> Other		

Wetland hydrology present? Yes No

Rationale for decision/remarks: Saturation, drainage patterns, free water.

SOILS

Map Unit Name (Series and Phase):

Kitsap silt loam 15 to 30 % slopes
 Taxonomy (subgroup)

Drainage Class

Field observations confirm mapped type? Yes No

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size and contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-12"		10YR 3/1	—	—	Sandy loam	
12-19"		10YR 4/1	—	—	Loamy sand	

Hydric Soil Indicators: (check all that apply)

- Histosol
- Histic Epipedon
- Sulfidic Odor
- Aquic Moisture Regime
- Reducing Conditions
- Gleyed or Low-Chroma (=1) matrix
- Matrix chroma ≤ 2 with mottles
- Mg or Fe Concretions
- High Organic Content in Surface Layer of Sandy Soils
- Organic Streaking in Sandy Soils
- Listed on National/Local Hydric Soils List
- Other (explain in remarks)

Hydric soils present? Yes No

Rationale for decision/Remarks: Low chroma

Wetland Determination

- Hydrophytic vegetation present? Yes No
- Hydric soils present? Yes No
- Wetland hydrology present? Yes No
- Is the sampling point within a wetland? Yes No

Rationale/Remarks: 3 of 3 parameters

NOTES:

1d Flagg, Flaggd along Row fence, ≈ 70% of wetland on other side of Row based on visual observations. Wetland runs down slope and ends in narrow reach mid-slope. Overcast, low soil.

Routine Wetland Determination

W 23,5R

DATA FORM 1 (Revised)

WA State Wetland Delineation Manual or 1987 Corps Wetland Delineation Manual

Project/Site: 405 S2060 I-5 Applicant/owner: WSDOT Investigator(s): C. Douglas, J. Purley	Date: 4/1/07 County: King State: WA S/T/R: 20/26N/5E
Do normal circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (atypical situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is the area a potential problem area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Explanation of atypical or problem area:	Community ID: - Transect ID: - Plot ID: Sp # 2 (up)

VEGETATION (For *strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	*Stratum	% cover	Indicator	Dominant Plant Species	*Stratum	% cover	Indicator
ACEMAC	T	80	FACV	HEATH L	H	30	FACV
ACECAR	T	30	FAC	POLMUN	H	40	FACV
ALNWB	T	10	FAC	RUBURS	S	10	FACV
TINPL	T	5	FAC	CORCOR	S	5	FACV
RUBSPE	S	20	FAC+				
ORMCAR	S	30	FACV				

HYDROPHYTIC VEGETATION INDICATORS: T = 9/110 = 8%, S = 27/50 = 40%, H = 9/20 = 45%
 % of dominants OBL, FACW, & FAC: = 20/230 = 9%

Check all indicators that apply and explain below:

- | | |
|--|--|
| <input type="checkbox"/> Visual observation of plant species growing in areas of prolonged inundation/saturation | <input type="checkbox"/> Physiological/reproductive adaptations |
| <input type="checkbox"/> Morphological adaptations | <input checked="" type="checkbox"/> Wetland plant database |
| <input checked="" type="checkbox"/> Technical Literature | <input checked="" type="checkbox"/> Personal knowledge of regional plant communities |
| | <input type="checkbox"/> Other (explain) |

Hydrophytic vegetation present? Yes No

Rationale for decision/Remarks: 9% Dom. FAC. VEG.

HYDROLOGY

Is it the growing season? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Water Marks: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No on	Sediment Deposits: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Based on: <input type="checkbox"/> Soil temp (record temp) <input checked="" type="checkbox"/> Other (explain) April	Drift Lines: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Drainage Patterns: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Depth of inundation: 0 inches	Oxidized Root (live roots) Channels <12in.: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Local Soil Survey: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Depth to free water in pit: 0 to 13"	FAC Neutral: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Water-stained Leaves: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Depth to saturated soil: 0 to 13"	Other (explain):	
Check all that apply & explain below: <input type="checkbox"/> Stream, lake or gage data <input type="checkbox"/> Aerial photographs <input type="checkbox"/> Other		

Wetland hydrology present? Yes No

Rationale for decision/remarks: No Hydric Features

SOILS

Map Unit Name (Series and Phase):

Kittap Silt loam 15 to 30% clay
Taxonomy (subgroup) *slp w*

Drainage Class

Field observations confirm mapped type? Yes No**Profile Description**

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size and contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-14"		10YR 4/3	—	—	Sandy loam	w/ gravel
14-18"		10YR 4/4	—	—	Sandy loam	w/ gravel

Hydric Soil Indicators: (check all that apply)

- | | |
|---|---|
| <input type="checkbox"/> Histosol | <input type="checkbox"/> Matrix chroma \leq 2 with mottles |
| <input type="checkbox"/> Histic Epipedon | <input type="checkbox"/> Mg or Fe Concretions |
| <input type="checkbox"/> Sulfidic Odor | <input type="checkbox"/> High Organic Content in Surface Layer of Sandy Soils |
| <input type="checkbox"/> Aquic Moisture Regime | <input type="checkbox"/> Organic Streaking in Sandy Soils |
| <input type="checkbox"/> Reducing Conditions | <input type="checkbox"/> Listed on National/Local Hydric Soils List |
| <input type="checkbox"/> Gleyed or Low-Chroma (=1) matrix | <input type="checkbox"/> Other (explain in remarks) |

Hydric soils present? Yes No

Rationale for decision/Remarks:

*No Hydric features***Wetland Determination**

Hydrophytic vegetation present?

 Yes No

Hydric soils present?

 Yes No

Wetland hydrology present?

 Yes No

Is the sampling point within a wetland?

 Yes No

Rationale/Remarks:

2 of 3 parameters

NOTES:

Revised 4/97

Wetland name or number 23.5R

WETLAND RATING FORM – WESTERN WASHINGTON
Version 2 – Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): 23.5R Date of site visit: 4/4/07

Rated by: C. Douglas, J. Pursten Trained by Ecology? Yes No Date of training:

SEC: 20 TOWNSHIP: 26N RANGE: 5E Is S/T/R in Appendix D? Yes No

Map of wetland unit: Figure Estimated size

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
Score for Hydrologic Functions
Score for Habitat Functions
TOTAL Score for Functions

4
6
18
28

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

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

IV

Summary of basic information about the wetland unit.

Wetland Unit has Special Characteristics		Wetland HGM Class used for Rating	
Estuarine	<input type="checkbox"/>	Depressional	<input type="checkbox"/>
Natural Heritage Wetland	<input type="checkbox"/>	Riverine	<input type="checkbox"/>
Bog	<input type="checkbox"/>	Lake-fringe	<input type="checkbox"/>
Mature Forest	<input type="checkbox"/>	Slope	<input checked="" type="checkbox"/>
Old Growth Forest	<input type="checkbox"/>	Flats	<input type="checkbox"/>
Coastal Lagoon	<input type="checkbox"/>	Freshwater Tidal	<input type="checkbox"/>
Interdunal	<input type="checkbox"/>		
None of the above	<input type="checkbox"/>	Check if unit has multiple HGM classes present	<input type="checkbox"/>

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

Check List for Wetlands that Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1. Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered animal or plant species (T/E species)? For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
SP2. Has the wetland unit been documented as habitat for any State listed Threatened or Endangered animal species? For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category 1 Natural Heritage Wetlands (see p. 19 of data form).	<input type="checkbox"/>	<input checked="" type="checkbox"/>
SP3. Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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.	<input type="checkbox"/>	<input checked="" type="checkbox"/>

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

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

Wetland name or number 23.5R

Classification of Vegetated Wetlands for Western Washington

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides (i.e. except during floods)?
NO - go to 2 YES - the wetland class is **Tidal Fringe**

If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?

YES - **Freshwater Tidal Fringe** NO - **Saltwater Tidal Fringe (Estuarine)**

If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is a Saltwater Tidal Fringe it is rated as an **Estuarine** wetland. Wetlands that were call estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p.).

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

NO - go to 3 YES - The wetland class is **Flats**

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

3. Does the entire wetland meet both of the following criteria?

_____ The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) where at least 20 acres (8ha) in size;

_____ At least 30% of the open water area is deeper than 6.6 (2 m)?

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

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

The wetland is on a slope (slope can be very gradual).

The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.

The water leaves the wetland **without being impounded**?

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

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

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

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

_____ The overbank flooding occurs at least once every two years.

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

NO - go to 6 YES - The wetland class is **Riverine**

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

NO - go to 7 YES - The wetland class is **Depressional**

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

No - go to 8 YES - The wetland class is **Depressional**

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

HGM Classes within the wetland unit being rated	HGM Class to Use in Rating
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

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

Wetland name or number 23.5

S Slope Wetlands		Points
WATER QUALITY FUNCTIONS - Indicators that wetland functions to improve water quality.		(only 1 score per box) (see p.64)
S 1	Does the wetland have the <u>potential</u> to improve water quality?	
S 1.1	Characteristics of average slope of unit: <ul style="list-style-type: none"> Slope is 1% or less (a 1% slope has a 1 ft. vertical drop in elevation for every 100 ft. horizontal distance)..... points = 3 Slope is 1% - 2% points = 2 Slope is 2% - 5% points = 1 Slope is greater than 5% points = 0 	1
S 1.2	The soil 2 inches below the surface (or duff layer) is clay <u>organic</u> (Use NRCS definitions). YES = 3 points NO = 0 points	0
S 1.3	Characteristics of the vegetation in the wetland that trap sediments and pollutants: Choose the points appropriate for the description that best fits the vegetation in the wetland. Dense vegetation means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 inches. <ul style="list-style-type: none"> Dense, uncut, herbaceous vegetation > 90% of the wetland area points = 6 Dense, uncut, herbaceous vegetation > 1/2 of area points = 3 Dense, woody, vegetation > 1/2 of area points = 2 Dense, uncut, herbaceous vegetation > 1/4 of area points = 1 Does not meet any of the criteria above for vegetation points = 0 	Figure 1
Total for S 1 Add the points in the boxes above		2
S 2	Does the wetland have the <u>opportunity</u> to improve water quality? Answer YES if you know or believe there are pollutants in groundwater or surface water coming into 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. <input type="checkbox"/> Grazing in the wetland or within 150 ft <input type="checkbox"/> Untreated stormwater discharges to wetland <input type="checkbox"/> Tilled fields, logging, or orchards within 150 ft. of wetland <input checked="" type="checkbox"/> Residential, urban areas, or golf courses are within 150 ft. upslope of wetland <input type="checkbox"/> Other _____ YES multiplier is 2 NO multiplier is 1	(see p. 67) Multiplier 2
TOTAL - Water Quality Functions Multiply the score from S1 by S2; then add score to table on p. 1		4
HYDROLOGIC FUNCTIONS - Indicators that wetland functions to reduce flooding and stream erosion.		
S 3	Does the wetland have the <u>potential</u> to reduce flooding and stream erosion?	(see p.68)
S 3.1	Characteristics of vegetation that reduce the velocity of surface flows during storms: Choose the points appropriate for the description that best fits conditions in the wetland (stems of plants should be thick enough (usually > 1/8in), or dense enough to remain erect during surface flows). <ul style="list-style-type: none"> Dense, uncut, rigid vegetation covers > 90% of the area of the wetland..... points = 6 Dense, uncut, rigid vegetation > 1/2 area of wetland points = 3 Dense, uncut, rigid vegetation > 1/4 area..... points = 1 More than 1/4 of area is grazed, mowed, tilled, or vegetation is not rigid..... points = 0 	1
S 3.2	Characteristics of slope wetland that holds back small amounts of flood flows. The slope has small surface depressions that can retain water over at least 10% of its area. YES = 2 points NO = 0 points	2
Total for S 3 Add the points in the boxes above		3
S 4	Does the wetland have the <u>opportunity</u> to reduce flooding and erosion? Is the wetland in a landscape position where the reduction in water velocity it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows? Note which of the following conditions apply. <input checked="" type="checkbox"/> Wetland has surface runoff that drains to a river or stream that has flooding problems <input type="checkbox"/> Other _____ (Answer NO if the major source of water is controlled by a reservoir (e.g. wetland is a seep that is on the downstream side of a dam)) YES multiplier is 2 NO multiplier is 1	(see p. 70) Multiplier 2
TOTAL - Hydrologic Functions Multiply the score from S3 by S4; then add score to table on p. 1		6

Comments:

Wetland name or number 20,5R

H 2	Does the wetland have the <u>opportunity</u> to provide habitat for many species?	(only 1 score per box)
	<p>H 2.1 <u>Buffers</u> (see P. 80): <i>Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed".</i></p> <p><input type="checkbox"/> 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% of circumference. No structures are within the undisturbed part of buffer (relatively undisturbed also means no grazing, no landscaping, no daily human use)... points = 5</p> <p><input type="checkbox"/> 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference..... points = 4</p> <p><input type="checkbox"/> 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference..... points = 4</p> <p><input type="checkbox"/> 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference..... points = 3</p> <p><input type="checkbox"/> 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference points = 3</p> <p>If buffer does not meet any of the criteria above:</p> <p><input type="checkbox"/> No paved areas (except paved trails) or buildings within 25m (80 ft) of wetland > 95% circumference. Light to moderate grazing or lawns are OK..... points = 2</p> <p><input type="checkbox"/> No paved areas of buildings within 50m of wetland for > 50% circumference. Light to moderate grazing or lawns are OK..... points = 2</p> <p><input type="checkbox"/> Heavy grazing in buffer points = 1</p> <p><input type="checkbox"/> Vegetated buffers are < 2m wide (6.6 ft) for more than 95% circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland)..... points = 0</p> <p><input type="checkbox"/> Buffer does not meet any of the criteria above points = 1</p> <p style="text-align: right;">Arial photo showing buffers</p>	<p>Figure <u> </u></p> <p style="text-align: center; font-size: 2em;">3</p>
	<p>H 2.2 <u>Corridors and Connections</u> (see p. 81)</p> <p>H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft. wide, has at least a 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (<i>Dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor.</i>)</p> <p style="text-align: center;">YES = 4 points (go to H 2.3) NO = go to H 2.2.2</p> <p>H. 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50 ft. wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? OR a Lake-fringe wetland, if it does not have an undisturbed corridor as in the question above?</p> <p style="text-align: center;">YES = 2 points (go to H 2.3) NO = go to H 2.2.3</p> <p>H. 2.2.3 Is the wetland:</p> <ul style="list-style-type: none"> • Within 5 mi (8km) of a brackish or salt water estuary OR • Within 3 miles of a large field or pasture (> 40 acres) OR • Within 1 mile of a lake greater than 20 acres? <p style="text-align: right;">YES = 1 point NO = 0 points</p>	<p style="text-align: center; font-size: 2em;">0</p>

Comments:

H 2.3 Near or adjacent to other priority habitats listed by WDFW (see p. 82):
 Which of the following priority habitats are within 330 ft. (100m) of the wetland? *NOTE: the connections do not have to be relatively undisturbed. These are DFW definitions. Check with your local DFW biologist if there are any questions.*

- ___ **Riparian:** The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.
- ___ **Aspen Stands:** Pure or mixed stands of aspen greater than 0.8 ha (2 acres)
- ___ **Cliffs:** Greater than 7.6m (25 ft) high and occurring below 5000 ft.
- ___ **Old-growth 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) > 81cm (32 in) dbh or > 200 years of age.
- ___ **Mature forests:** Stands with average diameters exceeding 53cm (21 in) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 – 200 years old west of the Cascade Crest.
- ___ **Prairies:** Relatively undisturbed areas (as indicated by dominance of native plants) where greases and/or forbs form the natural climax plant community.
- ___ **Talus:** Homogenous areas of rock rubble ranging in average size 0.15 – 2.0m (0.5 – 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.
- ___ **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages.
- ___ **Oregon white Oak:** Woodlands stands of pure oak or oak/conifer associations where canopy coverage of the oak component of the stand is 25%.
- ___ **Urban Natural Open Space:** A priority species resides within or is adjacent to the open space and uses it for breeding and/or regular feeding; and/or the open space functions as a corridor connecting other *priority habitats*, especially those that would otherwise be isolated; and/or the open space is an isolated remnant of natural habitat larger than 4 ha (10 acres) and is surrounded by urban development.
- ___ **Estuary/Estuary-like:** Deepwater tidal habitats and adjacent tidal wetlands, usually semi-enclosed by land but with open, partly obstructed or sporadic access to the open ocean, and in which ocean water is at least occasionally diluted by freshwater runoff from the land. The salinity may be periodically increased above that of the open ocean by evaporation. Along some low-energy coastlines there is appreciable dilution of sea water. Estuarine habitat extends upstream and landward to where ocean-derived salts measure less than 0.5 ppt. during the period of average annual low flow. Includes both estuaries and lagoons.
- ___ **Marine/Estuarine Shorelines:** Shorelines include the intertidal and subtidal zones of beaches, and may also include the backshore and adjacent components of the terrestrial landscape (e.g., cliffs, snags, mature trees, dunes, meadows) that are important to shoreline associated fish and wildlife and that contribute to shoreline function (e.g., sand/rock/log recruitment, nutrient contribution, erosion control).

If wetland has 3 or more priority habitats = 4 points If wetland has 1 priority habit ...= 1 point
 If wetland has 2 priority habitats= 3 points No habitats.....= 0 points
 Note: All vegetated wetlands are by definition a priority habitat but are not included in this list.
 (Nearby wetlands are addressed in question H 2.4).

H 2.4 Wetland Landscape: Choose the **one** description of the landscape around the wetland that best fits (see p. 84)

- There are at least 3 other wetlands within 1/2 mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development..... points = 5
- The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within 1/2 mile points = 5
- There are at least 3 other wetlands within 1/2 mile, BUT the connections between them are disturbed. points = 3
- The wetland fringe on a lake **with** disturbance and there are 3 other lake-fringe wetlands within 1/2 mile..... points = 3
- There is at least 1 wetland within 1/2 mile points = 2
- There are no wetlands within 1/2 mile points = 0

H 2 TOTAL Score – opportunity for providing habitat Add the scores from H2.1, H2.2, H2.3, H2.4 10

TOTAL for H 1 from page 8 8

◆ Total Score for Habitat Functions Add the points for H 1 and H 2; then record the result on p. 1 18

Comments:

Wetland name or number 27.502

SC4	<p>Forested Wetlands (see p. 90)</p> <p>Does the wetland have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? <i>If you answer yes you will still need to rate the wetland based on its function.</i></p> <p>___ Old-growth forests: (west of Cascade Crest) Stands of at least two three species forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm or more).</p> <p>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.</p> <p>___ Mature forests: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have an average diameters (dbh) exceeding 21 inches (53 cm); crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth.</p> <p>YES = Category I NO = ___ not a forested wetland with special characteristics</p>	Cat. I
SC5	<p>Wetlands in Coastal Lagoons (see p. 91)</p> <p>Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?</p> <p>___ 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.</p> <p>___ The lagoon in which the wetland is located contains surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon (<i>needs to be measured near the bottom.</i>)</p> <p>YES = Go to SC 5.1 NO ___ not a wetland in a coastal lagoon</p> <p>SC 5.1 Does the wetland meet all of the following three conditions?</p> <p>___ 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).</p> <p>___ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland.</p> <p>___ The wetland is larger than 1/10 acre (4350 square ft.)</p> <p>YES = Category I NO = Category II</p>	Cat. I Cat. II
SC6	<p>Interdunal Wetlands (see p. 93)</p> <p>Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)?</p> <p>YES = Go to SC 6.1 NO ___ not an interdunal wetland for rating</p> <p><i>If you answer yes you will still need to rate the wetland based on its functions.</i></p> <p>In practical terms that means the following geographic areas:</p> <ul style="list-style-type: none"> • Long Beach Peninsula -- lands west of SR 103 • Grayland-Westport -- lands west of SR 105 • Ocean Shores-Copalis -- lands west of SR 115 and SR 109 <p>SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is one acre or larger?</p> <p>YES = Category II NO = go to SC 6.2</p> <p>SC 6.2 Is the wetland between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre?</p> <p>YES = Category III</p>	Cat. II Cat. III
◆	<p>Category of wetland based on Special Characteristics</p> <p>Choose the "highest" rating if wetland falls into several categories, and record on p. 1.</p> <p>If you answered NO for all types enter "Not Applicable" on p. 1</p>	NA

Comments:

Wetland name or number 23.50

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

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

Wetland Type – Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.	
SC1	Estuarine wetlands? (see p.86) Does the wetland unit meet the following criteria for Estuarine wetlands? <input type="checkbox"/> The dominant water regime is tidal, <input type="checkbox"/> Vegetated, and <input type="checkbox"/> With a salinity greater than 0.5 ppt. YES = Go to SC 1.1 NO <u> </u>
	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
	SC 1.2 Is the wetland at least 1 acre in size and meets at least two of the following conditions? YES = Category I NO = Category II <input type="checkbox"/> The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native <i>Spartina</i> spp. are only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of <i>Spartina</i> would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category I. Do not, however, exclude the area of <i>Spartina</i> in determining the size threshold of 1 acre. <input type="checkbox"/> At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland <input type="checkbox"/> The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.
SC2	Natural Heritage Wetlands (see p. 87) Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland being rated in a Section/Township/Range that contains a natural heritage wetland? (This question is used to screen out most sites before you need to contact WNHP/DNR.) S/T/R information from Appendix D _____ or accessed from WNHP/DNR web site _____ YES _____ Contact WNHP/DNR (see p. 79) and go to SC 2.2 NO _____ SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as a site with state threatened or endangered plant species? YES = Category 1 NO <u> </u> not a Heritage Wetland
SC3	Bogs (see p. 87) Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? Use the key below to identify if the wetland is a bog. <i>If you answer yes you will still need to rate the wetland based on its function.</i> 1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of soil profile? (See Appendix B for a field key to identify organic soils)? YES = go to question 3 NO = go to question 2 2. Does the wetland have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? YES = go to question 3 NO = is not a bog for purpose of rating 3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the “bog” species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? YES = Is a bog for purpose of rating NO = go to question 4 NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16” deep. If the pH is less than 5.0 and the “bog” plant species in Table 3 are present, the wetland is a bog. 4. Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann’s spruce, or western white pine. WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover (> 50% coverage of the total shrub/herbaceous cover)? YES = Category I NO = Is not a bog for purpose of rating

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

Project Site: 405 195th to SR 527 City/County: Bothell/King Sampling Date: 3/23/09
 Applicant/Owner: WSDOT State: WA Sampling Point: Wet 25.0L SP#1U
 Investigator(s): C. Douglas, J. Pursley, A. Gale Section, Township, Range: 5, T26N, R5E
 Landform (hillslope, terrace, etc.): Interstate right-of-way Local relief (concave, convex, none): Slope to interstate Slope (%): 3%
 Subregion (LRR): A Lat: 47.46N Long: 122.11W Datum:
 Soil Map Unit Name: Alderwood gravelly sandy loam NWI classification: None mapped
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , Or Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , Or Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Is the Sampling Area within a Wetland?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Wetland Hydrology Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Remarks: Wetland extends outside of Interstate 405 right-of-way. Portion of wetland located within right-of-way, adjacent to paved surfaces of roadway. Wetland located on a slope down to the roadway.					

VEGETATION – Use scientific names of plants

<u>Tree Stratum</u> (Plot Size:)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. <i>Alnus rubra</i>	20	Yes	FAC	Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A) Total Number of Dominant Species Across All Strata: 3 (B) Percent of Dominant Species That Are OBL, FACW, or FAC: 34 (A/B)
2. <i>Acer macrophyllum</i>	15	Yes	FACU	
3. <i>Populus trichocarpa</i>	10	No	FAC	
4. <i>Pseudotsuga menziesii</i>	5	No	FACU	
50 = Total Cover				Prevalence Index worksheet: <u>Total % Cover of:</u> <u>Multiply by:</u> OBL species x1 = FACW species x2 = FAC species x3 = FACU species x4 = UPL species x5 = Column Totals: (A) (B) Prevalence Index = B/A =
<u>Sapling/Shrub Stratum</u> (Plot Size: 15 foot radius)				
5. <i>Corylus cornuta</i>	60	Yes	FACU	
6. <i>Rubus armeniacus</i>	30	No	FACU	
7. <i>Oemleria cerasiformis</i>	20	No	FACU	
8. <i>Ilex aquifolium</i>	5	No	FACU	
9.				
115 = Total Cover				
<u>Herb Stratum</u> (Plot Size: 5 foot radius)				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
0 = Total Cover				
<u>Woody Vine Stratum</u> (Plot Size: 5 foot radius)				
1.				
2.				
= Total Cover				
% Bare Ground in Herb Stratum	100			Hydrophytic Vegetation Indicators: No Dominance Test is >50% Prevalence Index is ≤3.0 ¹ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) Wetland Non-Vascular Plants ¹ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>				

Remarks: 34% dominant wetland vegetation per the Dominance test

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type ¹	Loc ²		
0 to 8	10YR 4/3	100	None	None	None	None	Sandy loam w/gravels	Fill prism
8 to 18+	10YR 5/4	100	None	None	None	None	Sandy loam w/gravels	Fill prism

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

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

Restrictive Layer (if present): Type: Depth (Inches):	Hydric Soils Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: 3 and 4 chroma with no depletions	

HYDROLOGY

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

Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches):	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: No hydric features observed	

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

Project Site: 405 195th to SR 527 City/County: Bothell/King Sampling Date: 3/23/09
 Applicant/Owner: WSDOT State: WA Sampling Point: Wet 25.0L SP#2W
 Investigator(s): C. Douglas, J. Pursley, A. Gale Section, Township, Range: 5, T26N, R5E
 Landform (hillslope, terrace, etc.): Interstate right-of-way Local relief (concave, convex, none): Slope to interstate Slope (%): 3%
 Subregion (LRR): A Lat: 47.46N Long: 122.11W Datum:
 Soil Map Unit Name: Alderwood gravelly sandy loam NWI classification: None mapped
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , Or Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , Or Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Is the Sampling Area within a Wetland?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Remarks: Wetland extends outside of Interstate 405 right-of-way. Portion of wetland located within right-of-way, adjacent to paved surfaces of roadway. Wetland located on a slope down to the roadway.					

VEGETATION – Use scientific names of plants

<u>Tree Stratum</u> (Plot Size: 30 foot radius)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:																
1.				Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A) Total Number of Dominant Species Across All Strata: 2 (B) Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)																
2.																				
3.																				
4.																				
= Total Cover				Prevalence Index worksheet: <table style="width: 100%; border: none;"> <tr> <td style="text-align: center;"><u>Total % Cover of:</u></td> <td style="text-align: center;"><u>Multiply by:</u></td> </tr> <tr> <td>OBL species</td> <td style="text-align: right;">x1 =</td> </tr> <tr> <td>FACW species</td> <td style="text-align: right;">x2 =</td> </tr> <tr> <td>FAC species</td> <td style="text-align: right;">x3 =</td> </tr> <tr> <td>FACU species</td> <td style="text-align: right;">x4 =</td> </tr> <tr> <td>UPL species</td> <td style="text-align: right;">x5 =</td> </tr> <tr> <td>Column Totals:</td> <td style="text-align: right;">(A) (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A =</td> </tr> </table>	<u>Total % Cover of:</u>	<u>Multiply by:</u>	OBL species	x1 =	FACW species	x2 =	FAC species	x3 =	FACU species	x4 =	UPL species	x5 =	Column Totals:	(A) (B)	Prevalence Index = B/A =	
<u>Total % Cover of:</u>	<u>Multiply by:</u>																			
OBL species	x1 =																			
FACW species	x2 =																			
FAC species	x3 =																			
FACU species	x4 =																			
UPL species	x5 =																			
Column Totals:	(A) (B)																			
Prevalence Index = B/A =																				
<u>Sapling/Shrub Stratum</u> (Plot Size: 15 foot radius)																				
5. <i>Rubus armeniacus</i>	30	Yes	FACU																	
6.																				
7.																				
8.																				
9.																				
30 = Total Cover																				
<u>Herb Stratum</u> (Plot Size: 5 foot radius)																				
10. <i>Phalaris arundinacea</i>	100	Yes	FACW																	
11. <i>Urtica dioica</i>	20	No	FAC+																	
12.																				
13.																				
14.																				
15.																				
16.																				
17.																				
18.																				
19.																				
20.																				
120 = Total Cover																				
<u>Woody Vine Stratum</u> (Plot Size: 5 foot radius)																				
1.																				
2.																				
= Total Cover																				
% Bare Ground in Herb Stratum	0			Hydrophytic Vegetation Indicators: No Dominance Test is >50% Prevalence Index is ≤3.0 ¹ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) Wetland Non-Vascular Plants ¹ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>																				
Remarks: 50% dominant wetland vegetation per the Dominance test																				

SOIL

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type ¹	Loc ²		
0 to 8	10YR 4/1	100	None	None	None	None	Sandy loam	
8 to 18+	10YR 5/2	97	10YR 6/6	3	D	M	Loamy sand	

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

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

- 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 Soils³:

- 2 cm Muck (A10)
- Red Parent Material (TF2)
- Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type:

Depth (Inches):

Hydric Soils Present?

Yes No

Remarks: 1 chroma, depletions

HYDROLOGY

Wetland Hydrology Indicators:

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes No Depth (inches):

Water Table Present? Yes No Depth (inches): 1 inch

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

Wetland Hydrology Present? Yes No

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

Remarks: Saturation at surface and water table present

Wetland name or number 25.0L

WETLAND RATING FORM – WESTERN WASHINGTON
Version 2 – Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): 25.0L Date of site visit: March 23, 2009

Rated by: C. Douglas, J. Pursley, A. Gale Trained by Ecology? Yes X No _____ Date of training: May 2007

SEC: 30 TWNShp: 26N RNgE: 5E Is S/T/R in Appendix D? Yes _____ No X

Map of wetland unit: Figure _____ Estimated size **0.4 acre (Approximately 0.26 acres located within 405 right-of-way)**

SUMMARY OF RATING

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

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

Score for Water Quality Functions	4
Score for Hydrologic Functions	0
Score for Habitat Functions	8
TOTAL Score for Functions	12

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

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

Summary of basic information about the wetland unit.

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

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

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

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

Classification of Vegetated Wetlands for Western Washington

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

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

NO – go to 2

YES – the wetland class is Tidal Fringe

If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?

YES – Freshwater Tidal Fringe

NO – Saltwater Tidal Fringe (Estuarine)

If your wetland can be classified as a Freshwater Tidal Fringe use the forms for Riverine wetlands. If it is a Saltwater Tidal Fringe it is rated as an Estuarine wetland. Wetlands that were call estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term “Estuarine” wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p. _____).

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

NO – go to 3

YES – The wetland class is Flats

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

3. Does the entire wetland meet both of the following criteria?

The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) where at least 20 acres (8ha) in size;

At least 30% of the open water area is deeper than 6.6 (2 m)?

NO – go to 4

YES – The wetland class is Lake-fringe (Lacustrine Fringe)

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

The wetland is on a slope (*slope can be very gradual*).

The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.

The water leaves the wetland **without being impounded?**

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

NO – go to 5

YES – The wetland class is Slope

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

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

The overbank flooding occurs at least once every two years.

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

NO – go to 6

YES – The wetland class is Riverine

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

NO – go to 7

YES – The wetland class is Depressional

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

No – go to 8

YES – The wetland class is Depressional

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

<i>HGM Classes within the wetland unit being rated</i>	<i>HGM Class to Use in Rating</i>
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

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

S Slope Wetlands		Points
WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.		(only 1 score per box) (see p.64)
S 1	Does the wetland have the <u>potential</u> to improve water quality?	
S 1.1	Characteristics of average slope of unit: <ul style="list-style-type: none"> Slope is 1% or less (a 1% slope has a 1 ft. vertical drop in elevation for every 100 ft. horizontal distance)..... points = 3 Slope is 1% - 2% points = 2 Slope is 2% - 5% points = 1 Slope is greater than 5% points = 0 	1
S 1.2	The soil 2 inches below the surface (or duff layer) is clay, organic (Use NRCS definitions). YES = 3 points NO = 0 points	0
S 1.3	Characteristics of the vegetation in the wetland that trap sediments and pollutants: <i>Choose the points appropriate for the description that best fits the vegetation in the wetland. Dense vegetation means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 inches.</i> <ul style="list-style-type: none"> Dense, uncut, herbaceous vegetation > 90% of the wetland area..... points = 6 Dense, uncut, herbaceous vegetation > 1/2 of area points = 3 Dense, woody, vegetation > 1/2 of area..... points = 2 Dense, uncut, herbaceous vegetation > 1/4 of area points = 1 Does not meet any of the criteria above for vegetation points = 0 Aerial photo or map with vegetation polygons	Figure ____ 1
Total for S 1 <i>Add the points in the boxes above</i>		2
S 2	Does the wetland have the <u>opportunity</u> to improve water quality?	(see p. 67)
Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? <i>Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.</i> <input type="checkbox"/> Grazing in the wetland or within 150 ft <input checked="" type="checkbox"/> Untreated stormwater discharges to wetland <input type="checkbox"/> Tilled fields, logging, or orchards within 150 ft. of wetland <input checked="" type="checkbox"/> Residential, urban areas, or golf courses are within 150 ft. upslope of wetland <input type="checkbox"/> Other _____ YES multiplier is <u>2</u> NO multiplier is 1		Multiplier <u>2</u>
◆ TOTAL – Water Quality Functions Multiply the score from S1 by S2; then <i>add score to table on p. 1</i>		4
HYDROLOGIC FUNCTIONS – Indicators that wetland functions to reduce flooding and stream erosion.		
S 3	Does the wetland have the <u>potential</u> to reduce flooding and stream erosion?	(see p.68)
S 3.1	Characteristics of vegetation that reduce the velocity of surface flows during storms: <i>Choose the points appropriate for the description that best fits conditions in the wetland (stems of plants should be thick enough (usually > 1/8in), or dense enough to remain erect during surface flows).</i> <ul style="list-style-type: none"> Dense, uncut, rigid vegetation covers > 90% of the area of the wetland points = 6 Dense, uncut, rigid vegetation > 1/2 area of wetland points = 3 Dense, uncut, rigid vegetation > 1/4 area..... points = 1 More than 1/4 of area is grazed, mowed, tilled, or vegetation is not rigid points = 0 	0
S 3.2	Characteristics of slope wetland that holds back small amounts of flood flows. The slope has small surface depressions that can retain water over at least 10% of its area. YES = 2 points NO = 0 points	0
Add the points in the boxes above		0
S 4	Does the wetland have the <u>opportunity</u> to reduce flooding and erosion?	(see p. 70)
Is the wetland in a landscape position where the reduction in water velocity it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows? <i>Note which of the following conditions apply.</i> <input checked="" type="checkbox"/> Wetland has surface runoff that drains to a river or stream that has flooding problems <input type="checkbox"/> Other _____ (Answer NO if the major source of water is controlled by a reservoir (e.g. wetland is a seep that is on the downstream side of a dam) YES multiplier is <u>2</u> NO multiplier is 1		Multiplier <u>2</u>
◆ TOTAL – Hydrologic Functions Multiply the score from S3 by S4; then <i>add score to table on p. 1</i>		0

Comments:

<i>These questions apply to wetlands of all HGM classes.</i>		Points (only 1 score per box)		
HABITAT FUNCTIONS – Indicators that wetland functions to provide important habitat.				
H 1	Does the wetland have the <u>potential</u> to provide habitat for many species?			
H 1.1 <u>Vegetation structure</u> (see P. 72): Check the types of vegetation classes present (as defined by Cowardin) – Size threshold for each class is 1/4 acre or more than 10% of the area if unit is smaller than 2.5 acres. <input type="checkbox"/> Aquatic Bed <input checked="" type="checkbox"/> Emergent plants <input checked="" type="checkbox"/> Scrub/shrub (areas where shrubs have > 30% cover) <input type="checkbox"/> Forested (areas where trees have > 30% cover) If the unit has a forested class check if: <input type="checkbox"/> The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon. Add the number of vegetation types that qualify. If you have:	Figure ____ 1			
<table border="0"> <tr> <td> 4 structures or more..... points = 4 2 structures..... points = 1 </td> <td> Map of Cowardin vegetation classes 3 structures..... points = 2 1 structure..... points = 0 </td> </tr> </table>		4 structures or more..... points = 4 2 structures..... points = 1	Map of Cowardin vegetation classes 3 structures..... points = 2 1 structure..... points = 0	
4 structures or more..... points = 4 2 structures..... points = 1	Map of Cowardin vegetation classes 3 structures..... points = 2 1 structure..... points = 0			
H 1.2 <u>Hydroperiods</u> (see p.73): Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or 1/4 acre to count (see text for descriptions of hydroperiods). <input type="checkbox"/> Permanently flooded or inundated <input type="checkbox"/> Seasonally flooded or inundated <input checked="" type="checkbox"/> Occasionally flooded or inundated <input checked="" type="checkbox"/> Saturated only <input type="checkbox"/> Permanently flowing stream or river in, or adjacent to, the wetland <input type="checkbox"/> Seasonally flowing stream in, or adjacent to, the wetland <input type="checkbox"/> Lake-fringe wetland..... = 2 points <input type="checkbox"/> Freshwater tidal wetland..... = 2 points	Figure ____ 1			
<table border="0"> <tr> <td> 4 or more types present points = 3 3 or more types present..... points = 2 2 types present..... points = 1 1 type present points = 0 </td> <td> Map of hydroperiods </td> </tr> </table>		4 or more types present points = 3 3 or more types present..... points = 2 2 types present..... points = 1 1 type present points = 0	Map of hydroperiods	
4 or more types present points = 3 3 or more types present..... points = 2 2 types present..... points = 1 1 type present points = 0	Map of hydroperiods			
H 1.3 <u>Richness of Plant Species</u> (see p. 75): Count the number of plant species in the wetland that cover at least 10 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: _____ _____ _____	Figure ____ 0			
H 1.4 <u>Interspersion of Habitats</u> (see p. 76): Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.	Figure ____ 1			
<p>None = 0 points Low = 1 point Moderate = 2 points</p> <p>High = 3 points [riparian braided channels]</p>		Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always “high”. Use map of Cowardin classes.		
H 1.5 <u>Special Habitat Features</u> (see p. 77): Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.	Figure ____ 0			
<input type="checkbox"/> Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft. long) <input type="checkbox"/> Standing snags (diameter at the bottom > 4 inches) in the wetland <input type="checkbox"/> Undercut banks are present for at least 6.6 ft. (2m) and/or overhanging vegetation extends at least 3.3 ft. (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft. (10m) <input type="checkbox"/> Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present (cut shrubs or trees that have not yet turned grey/brown) <input type="checkbox"/> At least 1/4 acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated (structures for egg-laying by amphibians) <input type="checkbox"/> Invasive plants cover less than 25% of the wetland area in each stratum of plants NOTE: The 20% stated in early printings of the manual on page 78 is an error.				
H 1 TOTAL Score – potential for providing habitat		Add the points in the column above 3		

	<p>H 2.3 <u>Near or adjacent to other priority habitats listed by WDFW</u> (see p. 82): Which of the following priority habitats are within 330 ft. (100m) of the wetland? <i>NOTE: the connections do not have to be relatively undisturbed. These are DFW definitions. Check with your local DFW biologist if there are any questions.</i></p> <p>_____ Riparian: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.</p> <p>_____ Aspen Stands: Pure or mixed stands of aspen greater than 0.8 ha (2 acres)</p> <p>_____ Cliffs: Greater than 7.6m (25 ft) high and occurring below 5000 ft.</p> <p>_____ Old-growth 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) > 81cm (32 in) dbh or > 200 years of age.</p> <p>_____ Mature forests: Stands with average diameters exceeding 53cm (21 in) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 – 200 years old west of the Cascade Crest.</p> <p>_____ Prairies: Relatively undisturbed areas (as indicated by dominance of native plants) where greases and/or forbs form the natural climax plant community.</p> <p>_____ Talus: Homogenous areas of rock rubble ranging in average size 0.15 – 2.0m (0.5 – 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.</p> <p>_____ Caves: A naturally occurring cavity, recess, void, or system of interconnected passages.</p> <p>_____ Oregon white Oak: Woodlands stands of pure oak or oak/conifer associations where canopy coverage of the oak component of the stand is 25%.</p> <p>_____ Urban Natural Open Space: A priority species resides within or is adjacent to the open space and uses it for breeding and/or regular feeding; and/or the open space functions as a corridor connecting other <i>priority habitats</i>, especially those that would otherwise be isolated; and/or the open space is an isolated remnant of natural habitat larger than 4 ha (10 acres) and is surrounded by urban development.</p> <p>_____ Estuary/Estuary-like: Deepwater tidal habitats and adjacent tidal wetlands, usually semi-enclosed by land but with open, partly obstructed or sporadic access to the open ocean, and in which ocean water is at least occasionally diluted by freshwater runoff from the land. The salinity may be periodically increased above that of the open ocean by evaporation. Along some low-energy coastlines there is appreciable dilution of sea water. Estuarine habitat extends upstream and landward to where ocean-derived salts measure less than 0.5 ppt. during the period of average annual low flow. Includes both estuaries and lagoons.</p> <p>_____ Marine/Estuarine Shorelines: Shorelines include the intertidal and subtidal zones of beaches, and may also include the backshore and adjacent components of the terrestrial landscape (e.g., cliffs, snags, mature trees, dunes, meadows) that are important to shoreline associated fish and wildlife and that contribute to shoreline function (e.g., sand/rock/log recruitment, nutrient contribution, erosion control).</p> <p>If wetland has 3 or more priority habitats..= 4 points If wetland has 1 priority habit .. = 1 point If wetland has 2 priority habitats.....= 3 points 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).</p>	0
	<p>H 2.4 <u>Wetland Landscape:</u> <i>Choose the one description of the landscape around the wetland that best fits (see p. 84)</i></p> <ul style="list-style-type: none"> • There are at least 3 other wetlands within 1/2 mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development.....points = 5 • The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within 1/2 milepoints = 5 • There are at least 3 other wetlands within 1/2 mile, BUT the connections between them are disturbed. points = 3 • The wetland fringe on a lake with disturbance and there are 3 other lake-fringe wetlands within 1/2 mile.....points = 3 • There is at least 1 wetland within 1/2 milepoints = 2 • There are no wetlands within 1/2 mile.....points = 0 	3
	<p>H 2 TOTAL Score – opportunity for providing habitat <i>Add the scores from H2.1, H2.2, H2.3, H2.4</i></p>	3
	<p><i>TOTAL for H 1 from page 8</i></p>	5
◆	<p>Total Score for Habitat Functions Add the points for H 1 and H 2; then record the result on p. 1</p>	8

Comments:

<p>SC4</p>	<p>Forested Wetlands (see p. 90) Does the wetland have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? <i>If you answer yes you will still need to rate the wetland based on its function.</i></p> <p>___ Old-growth forests: (west of Cascade Crest) Stands of at least two three species forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm or more).</p> <p>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.</p> <p>___ Mature forests: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have an average diameters (dbh) exceeding 21 inches (53 cm); crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth.</p> <p>YES = Category I NO = x ___ not a forested wetland with special characteristics</p>	<p>Cat. I</p>
<p>SC5</p>	<p>Wetlands in Coastal Lagoons (see p. 91) Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?</p> <p>___ 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.</p> <p>___ The lagoon in which the wetland is located contains surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon (<i>needs to be measured near the bottom.</i>)</p> <p>YES = Go to SC 5.1 NO x ___ not a wetland in a coastal lagoon</p> <p>SC 5.1 Does the wetland meet all of the following three conditions?</p> <p>___ 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).</p> <p>___ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland.</p> <p>___ The wetland is larger than 1/10 acre (4350 square ft.)</p> <p>YES = Category I NO = Category II</p>	<p>Cat. I</p> <p>Cat. II</p>
<p>SC6</p>	<p>Interdunal Wetlands (see p. 93) Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)?</p> <p>YES = Go to SC 6.1 NO x ___ not an interdunal wetland for rating</p> <p><i>If you answer yes you will still need to rate the wetland based on its functions.</i></p> <p>In practical terms that means the following geographic areas:</p> <ul style="list-style-type: none"> • Long Beach Peninsula -- lands west of SR 103 • Grayland-Westport -- lands west of SR 105 • Ocean Shores-Copalis – lands west of SR 115 and SR 109 <p>SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is one acre or larger? YES = Category II NO = go to SC 6.2</p> <p>SC 6.2 Is the wetland between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III</p>	<p>Cat. II</p> <p>Cat. III</p>
<p>◆</p>	<p>Category of wetland based on Special Characteristics Choose the "highest" rating if wetland falls into several categories, and record on p. 1. If you answered NO for all types enter "Not Applicable" on p. 1</p>	<p>NA</p>

Comments:

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

Project Site: 405 195th to SR 527 City/County: Bothell/King Sampling Date: 3/23/09
 Applicant/Owner: WSDOT State: WA Sampling Point: Wet 25.2L SP#1U
 Investigator(s): C. Douglas, J. Pursley, A. Gale Section, Township, Range: 5, T26N, R5E
 Landform (hillslope, terrace, etc.): Interstate right-of-way Local relief (concave, convex, none): Slope to interstate Slope (%): 3%
 Subregion (LRR): A Lat: 47.46N Long: 122.11W Datum:
 Soil Map Unit Name: Alderwood gravelly sandy loam NWI classification: None mapped
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , Or Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , Or Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Is the Sampling Area within a Wetland?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Wetland Hydrology Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Remarks: Majority of wetland is located outside of Interstate 405 right-of-way. Portion of wetland within right-of-way is dominated by <i>Rubus armeniacus</i>.					

VEGETATION – Use scientific names of plants

<u>Tree Stratum</u> (Plot Size: 30 foot radius)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. <i>Thuja plicata</i>	50	Yes	FAC	Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A) Total Number of Dominant Species Across All Strata: 3 (B) Percent of Dominant Species That Are OBL, FACW, or FAC: 66 (A/B)
2.				
3.				
4.				
50 = Total Cover				Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species x1 = FACW species x2 = FAC species x3 = FACU species x4 = UPL species x5 = Column Totals: (A) (B) Prevalence Index = B/A =
Sapling/Shrub Stratum	(Plot Size: 15 foot radius)			
5. <i>Rubus armeniacus</i>	60	Yes	FACU	
6. <i>Vaccinium parvifolium</i>	20	No	UPL	
7.				
8.				
9.				
80 = Total Cover				
Herb Stratum	(Plot Size: 5 foot radius)			
10. <i>Equisetum hyemale</i>	10	Yes	FACW	
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
10 = Total Cover				
Woody Vine Stratum	(Plot Size: 5 foot radius)			
1.				
2.				
= Total Cover				
% Bare Ground in Herb Stratum	90			Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>

Remarks: 66% dominant wetland vegetation per the Dominance test

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type ¹	Loc ²		
0 to 18+	10YR 6/2	100	None	None	None	None	Sandy loam w/gravels	Fill prism
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.)						Indicators for Problematic Hydric Soils³:		
<input type="checkbox"/> Histosol (A1)			<input type="checkbox"/> Sandy Redox (S5)			<input type="checkbox"/> 2 cm Muck (A10)		
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Stripped Matrix (S6)			<input type="checkbox"/> Red Parent Material (TF2)		
<input type="checkbox"/> Black Histic (A3)			<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)			<input type="checkbox"/> Other (Explain in Remarks)		
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Loamy Gleyed Matrix (F2)			³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.		
<input type="checkbox"/> Depleted Below Dark Surface (A11)			<input type="checkbox"/> Depleted Matrix (F3)					
<input type="checkbox"/> Thick Dark Surface (A12)			<input type="checkbox"/> Redox Dark Surface (F6)					
<input type="checkbox"/> Sandy Mucky Mineral (S1)			<input type="checkbox"/> Depleted Dark Surface (F7)					
<input type="checkbox"/> Sandy Gleyed Matrix (S4)			<input type="checkbox"/> Redox Depressions (F8)					
Restrictive Layer (if present):					Hydric Soils Present?			
Type:					Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>			
Depth (Inches):								
Remarks: 2 chroma with no depletions								

HYDROLOGY

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

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

Project Site: 405 195th to SR 527 City/County: Bothell/King Sampling Date: 3/23/09
 Applicant/Owner: WSDOT State: WA Sampling Point: Wet 25.2L SP#2W
 Investigator(s): C. Douglas, J. Pursley, A. Gale Section, Township, Range: 5, T26N, R5E
 Landform (hillslope, terrace, etc.): Interstate right-of-way Local relief (concave, convex, none): Slope to interstate Slope (%): 3%
 Subregion (LRR): A Lat: 47.46N Long: 122.11W Datum:
 Soil Map Unit Name: Alderwood gravelly sandy loam NWI classification: None mapped
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , Or Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , Or Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Is the Sampling Area within a Wetland?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>			
Remarks: Majority of wetland is located outside of Interstate 405 right-of-way. Portion of wetland within right-of-way is dominated by <i>Rubus armeniacus</i>. Portion outside right-of-way dominated by wetland vegetation.					

VEGETATION – Use scientific names of plants

<u>Tree Stratum</u> (Plot Size: 30 foot radius)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:																
1.				Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A) Total Number of Dominant Species Across All Strata: 1 (B) Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)																
2.																				
3.																				
4.																				
= Total Cover				Prevalence Index worksheet: <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;"><u>Total % Cover of:</u></td> <td style="text-align: center;"><u>Multiply by:</u></td> </tr> <tr> <td>OBL species</td> <td style="text-align: center;">x1 =</td> </tr> <tr> <td>FACW species</td> <td style="text-align: center;">x2 =</td> </tr> <tr> <td>FAC species</td> <td style="text-align: center;">x3 =</td> </tr> <tr> <td>FACU species</td> <td style="text-align: center;">x4 =</td> </tr> <tr> <td>UPL species</td> <td style="text-align: center;">x5 =</td> </tr> <tr> <td>Column Totals:</td> <td style="text-align: center;">(A) (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A =</td> </tr> </table>	<u>Total % Cover of:</u>	<u>Multiply by:</u>	OBL species	x1 =	FACW species	x2 =	FAC species	x3 =	FACU species	x4 =	UPL species	x5 =	Column Totals:	(A) (B)	Prevalence Index = B/A =	
<u>Total % Cover of:</u>	<u>Multiply by:</u>																			
OBL species	x1 =																			
FACW species	x2 =																			
FAC species	x3 =																			
FACU species	x4 =																			
UPL species	x5 =																			
Column Totals:	(A) (B)																			
Prevalence Index = B/A =																				
<u>Sapling/Shrub Stratum</u> (Plot Size: 15 foot radius)																				
5. <i>Rubus armeniacus</i>	80	Yes	FACU																	
6. <i>Rubus spectabilis</i>	15	No	FAC+																	
7.																				
8.																				
9.																				
100 = Total Cover																				
<u>Herb Stratum</u> (Plot Size: 5 foot radius)																				
10.																				
11.																				
12.																				
13.																				
14.																				
15.																				
16.																				
17.																				
18.																				
19.																				
20.																				
0 = Total Cover																				
<u>Woody Vine Stratum</u> (Plot Size: 5 foot radius)																				
1.																				
2.																				
= Total Cover																				
% Bare Ground in Herb Stratum	100																			
Hydrophytic Vegetation Indicators: No Dominance Test is >50% Prevalence Index is ≤3.0 ¹ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) Wetland Non-Vascular Plants ¹ Problematic Hydrophytic Vegetation ¹ (Explain)																				
¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																				
Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>																				
Remarks: 0% dominant wetland vegetation per the Dominance test. Majority of wetland is located outside of Interstate 405 right-of-way. Portion of wetland within right-of-way is dominated by <i>Rubus armeniacus</i> .																				

SOIL

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type ¹	Loc ²		
0 to 3	10YR 4/1	100	None	None	None	None	Sandy loam	
3 to 18+	10YR 6/2	97	10YR 6/6	3	D	M	Loamy sand	

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

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

- 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 Soils³:

- 2 cm Muck (A10)
- Red Parent Material (TF2)
- Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type:

Depth (Inches):

Hydric Soils Present?

Yes No

Remarks: 1 and 2 chroma, depletions

HYDROLOGY

Wetland Hydrology Indicators:

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

Secondary Indicators (2 or more required)

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

Field Observations:

- Surface Water Present? Yes No Depth (inches):
- Water Table Present? Yes No Depth (inches):
- Saturation Present? (includes capillary fringe) Yes No Depth (inches): At 2 inches

Wetland Hydrology Present? Yes No

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

Remarks: Saturation at 2 inches

Wetland name or number 25.2L

WETLAND RATING FORM – WESTERN WASHINGTON
Version 2 – Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): 25.2L Date of site visit: March 23, 2009

Rated by: C. Douglas, J. Pursley, A. Gale Trained by Ecology? Yes X No _____ Date of training: May 2007

SEC: 30 TWNShp: 26N RNgE: 5E Is S/T/R in Appendix D? Yes _____ No X

Map of wetland unit: Figure _____ Estimated size 0.3 acre (Approximately 0.002 acres located within 405 right-of-way)

SUMMARY OF RATING

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

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

Score for Water Quality Functions	6
Score for Hydrologic Functions	0
Score for Habitat Functions	11
TOTAL Score for Functions	17

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

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

Summary of basic information about the wetland unit.

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

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

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

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

Classification of Vegetated Wetlands for Western Washington

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

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

NO – go to 2

YES – the wetland class is Tidal Fringe

If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?

YES – Freshwater Tidal Fringe

NO – Saltwater Tidal Fringe (Estuarine)

*If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is a Saltwater Tidal Fringe it is rated as an **Estuarine** wetland. Wetlands that were 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 only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.

NO – go to 3

YES – The wetland class is Flats

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

3. Does the entire wetland meet both of the following criteria?

_____ The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) where at least 20 acres (8ha) in size;

_____ At least 30% of the open water area is deeper than 6.6 (2 m)?

NO – go to 4

YES – The wetland class is Lake-fringe (Lacustrine Fringe)

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

_____ The wetland is on a slope (*slope can be very gradual*).

_____ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.

_____ The water leaves the wetland **without being impounded?**

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

NO – go to 5

YES – The wetland class is Slope

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

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

_____ The overbank flooding occurs at least once every two years.

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

NO – go to 6

YES – The wetland class is Riverine

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

NO – go to 7

YES – The wetland class is Depressional

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

No – go to 8

YES – The wetland class is Depressional

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

<i>HGM Classes within the wetland unit being rated</i>	<i>HGM Class to Use in Rating</i>
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

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

S Slope Wetlands		Points
WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.		(only 1 score per box) (see p.64)
S 1	Does the wetland have the <u>potential</u> to improve water quality?	
S 1.1	Characteristics of average slope of unit: <ul style="list-style-type: none"> Slope is 1% or less (a 1% slope has a 1 ft. vertical drop in elevation for every 100 ft. horizontal distance)..... points = 3 Slope is 1% - 2% points = 2 Slope is 2% - 5% points = 1 Slope is greater than 5% points = 0 	2
S 1.2	The soil 2 inches below the surface (or duff layer) is clay, organic (Use NRCS definitions). YES = 3 points NO = 0 points	0
S 1.3	Characteristics of the vegetation in the wetland that trap sediments and pollutants: <i>Choose the points appropriate for the description that best fits the vegetation in the wetland. Dense vegetation means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 inches.</i> <ul style="list-style-type: none"> Dense, uncut, herbaceous vegetation > 90% of the wetland area..... points = 6 Dense, uncut, herbaceous vegetation > 1/2 of area points = 3 Dense, woody, vegetation > 1/2 of area..... points = 2 Dense, uncut, herbaceous vegetation > 1/4 of area points = 1 Does not meet any of the criteria above for vegetation points = 0 Aerial photo or map with vegetation polygons	Figure ____ 1
Total for S 1		Add the points in the boxes above 3
S 2	Does the wetland have the <u>opportunity</u> to improve water quality?	(see p. 67)
Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? <i>Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.</i> <input type="checkbox"/> Grazing in the wetland or within 150 ft <input checked="" type="checkbox"/> Untreated stormwater discharges to wetland <input type="checkbox"/> Tilled fields, logging, or orchards within 150 ft. of wetland <input checked="" type="checkbox"/> Residential, urban areas, or golf courses are within 150 ft. upslope of wetland <input type="checkbox"/> Other _____ YES multiplier is 2 NO multiplier is 1		Multiplier 2
◆ TOTAL – Water Quality Functions		Multiply the score from S1 by S2; then add score to table on p. 1 6
HYDROLOGIC FUNCTIONS – Indicators that wetland functions to reduce flooding and stream erosion.		
S 3	Does the wetland have the <u>potential</u> to reduce flooding and stream erosion?	(see p.68)
S 3.1	Characteristics of vegetation that reduce the velocity of surface flows during storms: <i>Choose the points appropriate for the description that best fits conditions in the wetland (stems of plants should be thick enough (usually > 1/8in), or dense enough to remain erect during surface flows).</i> <ul style="list-style-type: none"> Dense, uncut, rigid vegetation covers > 90% of the area of the wetland points = 6 Dense, uncut, rigid vegetation > 1/2 area of wetland points = 3 Dense, uncut, rigid vegetation > 1/4 area..... points = 1 More than 1/4 of area is grazed, mowed, tilled, or vegetation is not rigid points = 0 	0
S 3.2	Characteristics of slope wetland that holds back small amounts of flood flows. The slope has small surface depressions that can retain water over at least 10% of its area. YES = 2 points NO = 0 points	0
Add the points in the boxes above		0
S 4	Does the wetland have the <u>opportunity</u> to reduce flooding and erosion?	(see p. 70)
Is the wetland in a landscape position where the reduction in water velocity it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows? <i>Note which of the following conditions apply.</i> <input checked="" type="checkbox"/> Wetland has surface runoff that drains to a river or stream that has flooding problems <input type="checkbox"/> Other _____ (Answer NO if the major source of water is controlled by a reservoir (e.g. wetland is a seep that is on the downstream side of a dam) YES multiplier is 2 NO multiplier is 1		Multiplier 2
◆ TOTAL – Hydrologic Functions		Multiply the score from S3 by S4; then add score to table on p. 1 0

Comments:

<i>These questions apply to wetlands of all HGM classes.</i> HABITAT FUNCTIONS – Indicators that wetland functions to provide important habitat.		Points (only 1 score per box)
H 1	Does the wetland have the <u>potential</u> to provide habitat for many species?	
H 1.1	<p><u>Vegetation structure</u> (see P. 72): Check the types of vegetation classes present (as defined by Cowardin) – Size threshold for each class is 1/4 acre or more than 10% of the area if unit is smaller than 2.5 acres.</p> <p> <input type="checkbox"/> Aquatic Bed <input checked="" type="checkbox"/> Emergent plants <input checked="" type="checkbox"/> Scrub/shrub (areas where shrubs have > 30% cover) <input checked="" type="checkbox"/> Forested (areas where trees have > 30% cover) If the unit has a forested class check if: <input type="checkbox"/> The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon. Add the number of vegetation types that qualify. If you have: </p> <p style="text-align: right;"> Map of Cowardin vegetation classes 4 structures or more points = 4 3 structures points = <u>2</u> 2 structures points = 1 1 structure points = 0 </p>	<p>Figure ____</p> <p style="text-align: center;">2</p>
H 1.2	<p><u>Hydroperiods</u> (see p.73): Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or 1/4 acre to count (see text for descriptions of hydroperiods).</p> <p> <input type="checkbox"/> Permanently flooded or inundated <input type="checkbox"/> Seasonally flooded or inundated <input checked="" type="checkbox"/> Occasionally flooded or inundated <input checked="" type="checkbox"/> Saturated only <input type="checkbox"/> Permanently flowing stream or river in, or adjacent to, the wetland <input type="checkbox"/> Seasonally flowing stream in, or adjacent to, the wetland <input type="checkbox"/> Lake-fringe wetland = 2 points <input type="checkbox"/> Freshwater tidal wetland = 2 points </p> <p style="text-align: right;"> 4 or more types present points = 3 3 or more types present points = 2 2 types present points = <u>1</u> 1 type present points = 0 </p> <p style="text-align: right;">Map of hydroperiods</p>	<p>Figure ____</p> <p style="text-align: center;">1</p>
H 1.3	<p><u>Richness of Plant Species</u> (see p. 75): Count the number of plant species in the wetland that cover at least 10 ft² (different patches of the same species can be combined to meet the size threshold) You do not have to name the species. Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle. If you counted: > 19 species points = 2 5 – 19 species <u>points = 1</u> < 5 species points = 0</p> <p>List species below if you want to:</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p style="text-align: center;">1</p>
H 1.4	<p><u>Interspersion of Habitats</u> (see p. 76): Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.</p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;">  None = 0 points </div> <div style="text-align: center;">  Low = 1 point </div> <div style="text-align: center;">  Moderate = 2 points </div> <div style="text-align: center;">  High = 3 points </div> </div> <p style="text-align: center;">[riparian braided channels]</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always “high”.</p> <p style="text-align: center;">Use map of Cowardin classes.</p> </div>	<p>Figure ____</p> <p style="text-align: center;">2</p>
H 1.5	<p><u>Special Habitat Features</u> (see p. 77): Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.</p> <p> <input type="checkbox"/> Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft. long) <input type="checkbox"/> Standing snags (diameter at the bottom > 4 inches) in the wetland <input type="checkbox"/> Undercut banks are present for at least 6.6 ft. (2m) and/or overhanging vegetation extends at least 3.3 ft. (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft. (10m) <input type="checkbox"/> Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present (cut shrubs or trees that have not yet turned grey/brown) <input type="checkbox"/> At least 1/4 acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated (structures for egg-laying by amphibians) <input type="checkbox"/> Invasive plants cover less than 25% of the wetland area in each stratum of plants NOTE: The 20% stated in early printings of the manual on page 78 is an error. </p>	<p style="text-align: center;">0</p>
H 1 TOTAL Score – potential for providing habitat		Add the points in the column above 6

	<p>H 2.3 <u>Near or adjacent to other priority habitats listed by WDFW</u> (see p. 82): Which of the following priority habitats are within 330 ft. (100m) of the wetland? <i>NOTE: the connections do not have to be relatively undisturbed. These are DFW definitions. Check with your local DFW biologist if there are any questions.</i></p> <p>_____ Riparian: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.</p> <p>_____ Aspen Stands: Pure or mixed stands of aspen greater than 0.8 ha (2 acres)</p> <p>_____ Cliffs: Greater than 7.6m (25 ft) high and occurring below 5000 ft.</p> <p>_____ Old-growth 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) > 81cm (32 in) dbh or > 200 years of age.</p> <p>_____ Mature forests: Stands with average diameters exceeding 53cm (21 in) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 – 200 years old west of the Cascade Crest.</p> <p>_____ Prairies: Relatively undisturbed areas (as indicated by dominance of native plants) where greases and/or forbs form the natural climax plant community.</p> <p>_____ Talus: Homogenous areas of rock rubble ranging in average size 0.15 – 2.0m (0.5 – 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.</p> <p>_____ Caves: A naturally occurring cavity, recess, void, or system of interconnected passages.</p> <p>_____ Oregon white Oak: Woodlands stands of pure oak or oak/conifer associations where canopy coverage of the oak component of the stand is 25%.</p> <p>_____ Urban Natural Open Space: A priority species resides within or is adjacent to the open space and uses it for breeding and/or regular feeding; and/or the open space functions as a corridor connecting other <i>priority habitats</i>, especially those that would otherwise be isolated; and/or the open space is an isolated remnant of natural habitat larger than 4 ha (10 acres) and is surrounded by urban development.</p> <p>_____ Estuary/Estuary-like: Deepwater tidal habitats and adjacent tidal wetlands, usually semi-enclosed by land but with open, partly obstructed or sporadic access to the open ocean, and in which ocean water is at least occasionally diluted by freshwater runoff from the land. The salinity may be periodically increased above that of the open ocean by evaporation. Along some low-energy coastlines there is appreciable dilution of sea water. Estuarine habitat extends upstream and landward to where ocean-derived salts measure less than 0.5 ppt. during the period of average annual low flow. Includes both estuaries and lagoons.</p> <p>_____ Marine/Estuarine Shorelines: Shorelines include the intertidal and subtidal zones of beaches, and may also include the backshore and adjacent components of the terrestrial landscape (e.g., cliffs, snags, mature trees, dunes, meadows) that are important to shoreline associated fish and wildlife and that contribute to shoreline function (e.g., sand/rock/log recruitment, nutrient contribution, erosion control).</p> <p>If wetland has 3 or more priority habitats..= 4 points If wetland has 1 priority habit .. = 1 point If wetland has 2 priority habitats.....= 3 points 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).</p>	0
	<p>H 2.4 <u>Wetland Landscape:</u> <i>Choose the one description of the landscape around the wetland that best fits (see p. 84)</i></p> <ul style="list-style-type: none"> • There are at least 3 other wetlands within 1/2 mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development.....points = 5 • The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within 1/2 milepoints = 5 • There are at least 3 other wetlands within 1/2 mile, BUT the connections between them are disturbed. points = 3 • The wetland fringe on a lake with disturbance and there are 3 other lake-fringe wetlands within 1/2 mile.....points = 3 • There is at least 1 wetland within 1/2 milepoints = 2 • There are no wetlands within 1/2 mile.....points = 0 	3
	<p>H 2 TOTAL Score – opportunity for providing habitat <i>Add the scores from H2.1, H2.2, H2.3, H2.4</i></p>	5
	<p style="text-align: right;"><i>TOTAL for H 1 from page 8</i></p>	6
◆	<p>Total Score for Habitat Functions Add the points for H 1 and H 2; then record the result on p. 1</p>	11

Comments:

<p>SC4</p>	<p>Forested Wetlands (see p. 90) Does the wetland have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? <i>If you answer yes you will still need to rate the wetland based on its function.</i></p> <p>___ Old-growth forests: (west of Cascade Crest) Stands of at least two three species forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm or more).</p> <p>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.</p> <p>___ Mature forests: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have an average diameters (dbh) exceeding 21 inches (53 cm); crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth.</p> <p>YES = Category I NO = x___ not a forested wetland with special characteristics</p>	<p>Cat. I</p>
<p>SC5</p>	<p>Wetlands in Coastal Lagoons (see p. 91) Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?</p> <p>___ 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.</p> <p>___ The lagoon in which the wetland is located contains surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon (<i>needs to be measured near the bottom.</i>)</p> <p>YES = Go to SC 5.1 NO x___ not a wetland in a coastal lagoon</p> <p>SC 5.1 Does the wetland meet all of the following three conditions?</p> <p>___ 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).</p> <p>___ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland.</p> <p>___ The wetland is larger than 1/10 acre (4350 square ft.)</p> <p>YES = Category I NO = Category II</p>	<p>Cat. I</p> <p>Cat. II</p>
<p>SC6</p>	<p>Interdunal Wetlands (see p. 93) Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)?</p> <p>YES = Go to SC 6.1 NO x___ not an interdunal wetland for rating</p> <p><i>If you answer yes you will still need to rate the wetland based on its functions.</i></p> <p>In practical terms that means the following geographic areas:</p> <ul style="list-style-type: none"> • Long Beach Peninsula -- lands west of SR 103 • Grayland-Westport -- lands west of SR 105 • Ocean Shores-Copalis – lands west of SR 115 and SR 109 <p>SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is one acre or larger? YES = Category II NO = go to SC 6.2</p> <p>SC 6.2 Is the wetland between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III</p>	<p>Cat. II</p> <p>Cat. III</p>
<p>◆</p>	<p>Category of wetland based on Special Characteristics Choose the "highest" rating if wetland falls into several categories, and record on p. 1. If you answered NO for all types enter "Not Applicable" on p. 1</p>	<p>NA</p>

Comments:

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

Project Site: 405 195th to SR 527 City/County: Bothell/King Sampling Date: 3/23/09
 Applicant/Owner: WSDOT State: WA Sampling Point: Wet 25.22L SP#2W
 Investigator(s): C. Douglas, J. Pursley, A. Gale Section, Township, Range: 5, T26N, R5E
 Landform (hillslope, terrace, etc.): Interstate right-of-way Local relief (concave, convex, none): Slope to interstate Slope (%): 3%
 Subregion (LRR): A Lat: 47.46N Long: 122.11W Datum:
 Soil Map Unit Name: Alderwood gravelly sandy loam NWI classification: None mapped
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , Or Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , Or Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Is the Sampling Area within a Wetland?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Remarks: Wetland located within Interstate 405 right-of-way, adjacent to paved surfaces of roadway. Wetland located on a slope down to the roadway.					

VEGETATION – Use scientific names of plants

<u>Tree Stratum</u> (Plot Size: 30 foot radius)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1.				Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A) Total Number of Dominant Species Across All Strata: 2 (B) Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)
2.				
3.				
4.				
= Total Cover				Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species x1 = FACW species x2 = FAC species x3 = FACU species x4 = UPL species x5 = Column Totals: (A) (B) Prevalence Index = B/A =
<u>Sapling/Shrub Stratum</u> (Plot Size: 15 foot radius)				
5. <i>Rubus spectabilis</i>	70	Yes	FAC+	
6.				
7.				
8.				
9.				
70 = Total Cover				
<u>Herb Stratum</u> (Plot Size: 5 foot radius)				
10. <i>Tolmiea menziesii</i>	60	Yes	FAC	
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
0 = Total Cover				
<u>Woody Vine Stratum</u> (Plot Size: 5 foot radius)				
1.				
2.				
0 = Total Cover				
% Bare Ground in Herb Stratum	40			Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>

Remarks: 100% dominant wetland vegetation per the Dominance test.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type ¹	Loc ²		
0 to 9	10YR 4/1	100	None	None	None	None	Silt loam	
9 to 18+	10YR 4/1	97	10YR 6/6	3	D	M	Sandy silt	

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

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

Restrictive Layer (if present): Type: Depth (Inches):	Hydric Soils Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: 1 chroma, depletions	

HYDROLOGY

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

Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): 11 inches Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): 5 inches (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: Saturation and water table observed in sample plot	

Wetland name or number 25.22L

WETLAND RATING FORM – WESTERN WASHINGTON
Version 2 – Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): 25.22L Date of site visit: March 23, 2009

Rated by: C. Douglas, J. Pursley, A. Gale Trained by Ecology? Yes X No _____ Date of training: May 2007

SEC: 30 TWNShp: 26N RNgE: 5E Is S/T/R in Appendix D? Yes _____ No X

Map of wetland unit: Figure _____ Estimated size 0.15 acre

SUMMARY OF RATING

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

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

Score for Water Quality Functions	4
Score for Hydrologic Functions	0
Score for Habitat Functions	8
TOTAL Score for Functions	12

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

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

Summary of basic information about the wetland unit.

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

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

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

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

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

Classification of Vegetated Wetlands for Western Washington

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

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

NO – go to 2

YES – the wetland class is Tidal Fringe

If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?

YES – Freshwater Tidal Fringe

NO – Saltwater Tidal Fringe (Estuarine)

*If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is a Saltwater Tidal Fringe it is rated as an **Estuarine** wetland. Wetlands that were call estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term “Estuarine” wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p. _____).*

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

NO – go to 3

YES – The wetland class is Flats

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

3. Does the entire wetland meet both of the following criteria?

The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) where at least 20 acres (8ha) in size;

At least 30% of the open water area is deeper than 6.6 (2 m)?

NO – go to 4

YES – The wetland class is Lake-fringe (Lacustrine Fringe)

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

The wetland is on a slope (*slope can be very gradual*).

The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.

The water leaves the wetland **without being impounded?**

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

NO – go to 5

YES – The wetland class is Slope

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

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

The overbank flooding occurs at least once every two years.

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

NO – go to 6

YES – The wetland class is Riverine

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

NO – go to 7

YES – The wetland class is Depressional

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

No – go to 8

YES – The wetland class is Depressional

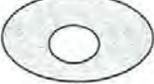
8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. **GO BACK AND IDENTIFY WHICH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

<i>HGM Classes within the wetland unit being rated</i>	<i>HGM Class to Use in Rating</i>
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

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

S Slope Wetlands		Points
WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.		(only 1 score per box) (see p.64)
S 1	Does the wetland have the <u>potential</u> to improve water quality?	
S 1.1	Characteristics of average slope of unit: <ul style="list-style-type: none"> Slope is 1% or less (a 1% slope has a 1 ft. vertical drop in elevation for every 100 ft. horizontal distance)..... points = 3 Slope is 1% - 2% points = 2 Slope is 2% - 5% points = 1 Slope is greater than 5% points = 0 	1
S 1.2	The soil 2 inches below the surface (or duff layer) is clay, organic (Use NRCS definitions). YES = 3 points NO = 0 points	0
S 1.3	Characteristics of the vegetation in the wetland that trap sediments and pollutants: <i>Choose the points appropriate for the description that best fits the vegetation in the wetland. Dense vegetation means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 inches.</i> <ul style="list-style-type: none"> Dense, uncut, herbaceous vegetation > 90% of the wetland area..... points = 6 Dense, uncut, herbaceous vegetation > 1/2 of area points = 3 Dense, woody, vegetation > 1/2 of area..... points = 2 Dense, uncut, herbaceous vegetation > 1/4 of area points = 1 Does not meet any of the criteria above for vegetation points = 0 Aerial photo or map with vegetation polygons	Figure ____ 1
Total for S 1 <i>Add the points in the boxes above</i>		2
S 2	Does the wetland have the <u>opportunity</u> to improve water quality?	(see p. 67)
Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? <i>Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.</i> <input type="checkbox"/> Grazing in the wetland or within 150 ft <input checked="" type="checkbox"/> Untreated stormwater discharges to wetland <input type="checkbox"/> Tilled fields, logging, or orchards within 150 ft. of wetland <input checked="" type="checkbox"/> Residential, urban areas, or golf courses are within 150 ft. upslope of wetland <input type="checkbox"/> Other _____ YES multiplier is <u>2</u> NO multiplier is 1		Multiplier <u>2</u>
◆	TOTAL – Water Quality Functions Multiply the score from S1 by S2; then add score to table on p. 1	4
HYDROLOGIC FUNCTIONS – Indicators that wetland functions to reduce flooding and stream erosion.		
S 3	Does the wetland have the <u>potential</u> to reduce flooding and stream erosion?	(see p.68)
S 3.1	Characteristics of vegetation that reduce the velocity of surface flows during storms: <i>Choose the points appropriate for the description that best fits conditions in the wetland (stems of plants should be thick enough (usually > 1/8in), or dense enough to remain erect during surface flows).</i> <ul style="list-style-type: none"> Dense, uncut, rigid vegetation covers > 90% of the area of the wetland points = 6 Dense, uncut, rigid vegetation > 1/2 area of wetland points = 3 Dense, uncut, rigid vegetation > 1/4 area..... points = 1 More than 1/4 of area is grazed, mowed, tilled, or vegetation is not rigid points = 0 	0
S 3.2	Characteristics of slope wetland that holds back small amounts of flood flows. The slope has small surface depressions that can retain water over at least 10% of its area. YES = 2 points NO = 0 points	0
Add the points in the boxes above		0
S 4	Does the wetland have the <u>opportunity</u> to reduce flooding and erosion?	(see p. 70)
Is the wetland in a landscape position where the reduction in water velocity it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows? <i>Note which of the following conditions apply.</i> <input checked="" type="checkbox"/> Wetland has surface runoff that drains to a river or stream that has flooding problems <input type="checkbox"/> Other _____ (Answer NO if the major source of water is controlled by a reservoir (e.g. wetland is a seep that is on the downstream side of a dam) YES multiplier is <u>2</u> NO multiplier is 1		Multiplier <u>2</u>
◆	TOTAL – Hydrologic Functions Multiply the score from S3 by S4; then add score to table on p. 1	0

Comments:

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

	<p>H 2.3 <u>Near or adjacent to other priority habitats listed by WDFW</u> (see p. 82): Which of the following priority habitats are within 330 ft. (100m) of the wetland? <i>NOTE: the connections do not have to be relatively undisturbed. These are DFW definitions. Check with your local DFW biologist if there are any questions.</i></p> <p>_____ Riparian: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.</p> <p>_____ Aspen Stands: Pure or mixed stands of aspen greater than 0.8 ha (2 acres)</p> <p>_____ Cliffs: Greater than 7.6m (25 ft) high and occurring below 5000 ft.</p> <p>_____ Old-growth 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) > 81cm (32 in) dbh or > 200 years of age.</p> <p>_____ Mature forests: Stands with average diameters exceeding 53cm (21 in) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 – 200 years old west of the Cascade Crest.</p> <p>_____ Prairies: Relatively undisturbed areas (as indicated by dominance of native plants) where greases and/or forbs form the natural climax plant community.</p> <p>_____ Talus: Homogenous areas of rock rubble ranging in average size 0.15 – 2.0m (0.5 – 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.</p> <p>_____ Caves: A naturally occurring cavity, recess, void, or system of interconnected passages.</p> <p>_____ Oregon white Oak: Woodlands stands of pure oak or oak/conifer associations where canopy coverage of the oak component of the stand is 25%.</p> <p>_____ Urban Natural Open Space: A priority species resides within or is adjacent to the open space and uses it for breeding and/or regular feeding; and/or the open space functions as a corridor connecting other <i>priority habitats</i>, especially those that would otherwise be isolated; and/or the open space is an isolated remnant of natural habitat larger than 4 ha (10 acres) and is surrounded by urban development.</p> <p>_____ Estuary/Estuary-like: Deepwater tidal habitats and adjacent tidal wetlands, usually semi-enclosed by land but with open, partly obstructed or sporadic access to the open ocean, and in which ocean water is at least occasionally diluted by freshwater runoff from the land. The salinity may be periodically increased above that of the open ocean by evaporation. Along some low-energy coastlines there is appreciable dilution of sea water. Estuarine habitat extends upstream and landward to where ocean-derived salts measure less than 0.5 ppt. during the period of average annual low flow. Includes both estuaries and lagoons.</p> <p>_____ Marine/Estuarine Shorelines: Shorelines include the intertidal and subtidal zones of beaches, and may also include the backshore and adjacent components of the terrestrial landscape (e.g., cliffs, snags, mature trees, dunes, meadows) that are important to shoreline associated fish and wildlife and that contribute to shoreline function (e.g., sand/rock/log recruitment, nutrient contribution, erosion control).</p> <p>If wetland has 3 or more priority habitats..= 4 points If wetland has 1 priority habit .. = 1 point If wetland has 2 priority habitats.....= 3 points 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).</p>	0
	<p>H 2.4 <u>Wetland Landscape:</u> <i>Choose the one description of the landscape around the wetland that best fits (see p. 84)</i></p> <ul style="list-style-type: none"> • There are at least 3 other wetlands within 1/2 mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development.....points = 5 • The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within 1/2 milepoints = 5 • There are at least 3 other wetlands within 1/2 mile, BUT the connections between them are disturbed. points = 3 • The wetland fringe on a lake with disturbance and there are 3 other lake-fringe wetlands within 1/2 mile.....points = 3 • There is at least 1 wetland within 1/2 milepoints = 2 • There are no wetlands within 1/2 mile.....points = 0 	3
<p>H 2 TOTAL Score – opportunity for providing habitat <i>Add the scores from H2.1, H2.2, H2.3, H2.4</i></p>		5
<p><i>TOTAL for H 1 from page 8</i></p>		3
◆	<p>Total Score for Habitat Functions Add the points for H 1 and H 2; then record the result on p. 1</p>	8

Comments:

<p>SC4</p>	<p>Forested Wetlands (see p. 90) Does the wetland have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? <i>If you answer yes you will still need to rate the wetland based on its function.</i></p> <p>___ Old-growth forests: (west of Cascade Crest) Stands of at least two three species forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm or more).</p> <p>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.</p> <p>___ Mature forests: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have an average diameters (dbh) exceeding 21 inches (53 cm); crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth.</p> <p>YES = Category I NO = x ___ not a forested wetland with special characteristics</p>	<p>Cat. I</p>
<p>SC5</p>	<p>Wetlands in Coastal Lagoons (see p. 91) Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?</p> <p>___ 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.</p> <p>___ The lagoon in which the wetland is located contains surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon (<i>needs to be measured near the bottom.</i>)</p> <p>YES = Go to SC 5.1 NO x ___ not a wetland in a coastal lagoon</p> <p>SC 5.1 Does the wetland meet all of the following three conditions?</p> <p>___ 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).</p> <p>___ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland.</p> <p>___ The wetland is larger than 1/10 acre (4350 square ft.)</p> <p>YES = Category I NO = Category II</p>	<p>Cat. I</p> <p>Cat. II</p>
<p>SC6</p>	<p>Interdunal Wetlands (see p. 93) Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)?</p> <p>YES = Go to SC 6.1 NO x ___ not an interdunal wetland for rating</p> <p><i>If you answer yes you will still need to rate the wetland based on its functions.</i></p> <p>In practical terms that means the following geographic areas:</p> <ul style="list-style-type: none"> • Long Beach Peninsula -- lands west of SR 103 • Grayland-Westport -- lands west of SR 105 • Ocean Shores-Copalis – lands west of SR 115 and SR 109 <p>SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is one acre or larger? YES = Category II NO = go to SC 6.2</p> <p>SC 6.2 Is the wetland between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III</p>	<p>Cat. II</p> <p>Cat. III</p>
<p>◆</p>	<p>Category of wetland based on Special Characteristics Choose the "highest" rating if wetland falls into several categories, and record on p. 1. If you answered NO for all types enter "Not Applicable" on p. 1</p>	<p>NA</p>

Comments:

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

Project Site: 405 195th to SR 527 City/County: Bothell/King Sampling Date: 3/23/09
 Applicant/Owner: WSDOT State: WA Sampling Point: Wet 25.3L SP#1W
 Investigator(s): C. Douglas, J. Pursley, A. Gale Section, Township, Range: 5, T26N, R5E
 Landform (hillslope, terrace, etc.): Interstate right-of-way Local relief (concave, convex, none): Slope to interstate Slope (%): 3%
 Subregion (LRR): A Lat: 47.46N Long: 122.11W Datum:
 Soil Map Unit Name: Alderwood gravelly sandy loam NWI classification: None mapped
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , Or Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , Or Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Is the Sampling Area within a Wetland?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Remarks: Wetland located within Interstate 405 right-of-way, adjacent to paved surfaces of roadway. Wetland located on a slope down to the roadway. Wetland associated with seasonal stream that flows into culvert beneath 405. Wetland extends outside right-of-way.					

VEGETATION – Use scientific names of plants

<u>Tree Stratum</u> (Plot Size: 30 foot radius)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:																
1. <i>Alnus rubra</i>	10	Yes	FAC	Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A) Total Number of Dominant Species Across All Strata: 2 (B) Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)																
2.																				
3.																				
4.																				
10 = Total Cover				Prevalence Index worksheet: <table style="width: 100%; border: none;"> <tr> <td style="text-align: center;"><u>Total % Cover of:</u></td> <td style="text-align: center;"><u>Multiply by:</u></td> </tr> <tr> <td>OBL species</td> <td style="text-align: center;">x1 =</td> </tr> <tr> <td>FACW species</td> <td style="text-align: center;">x2 =</td> </tr> <tr> <td>FAC species</td> <td style="text-align: center;">x3 =</td> </tr> <tr> <td>FACU species</td> <td style="text-align: center;">x4 =</td> </tr> <tr> <td>UPL species</td> <td style="text-align: center;">x5 =</td> </tr> <tr> <td>Column Totals:</td> <td style="text-align: center;">(A) (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A =</td> </tr> </table>	<u>Total % Cover of:</u>	<u>Multiply by:</u>	OBL species	x1 =	FACW species	x2 =	FAC species	x3 =	FACU species	x4 =	UPL species	x5 =	Column Totals:	(A) (B)	Prevalence Index = B/A =	
<u>Total % Cover of:</u>	<u>Multiply by:</u>																			
OBL species	x1 =																			
FACW species	x2 =																			
FAC species	x3 =																			
FACU species	x4 =																			
UPL species	x5 =																			
Column Totals:	(A) (B)																			
Prevalence Index = B/A =																				
<u>Sapling/Shrub Stratum</u> (Plot Size: 15 foot radius)																				
5.																				
6.																				
7.																				
8.																				
9.																				
0 = Total Cover																				
<u>Herb Stratum</u> (Plot Size: 5 foot radius)																				
10. <i>Tolmiea menziesii</i>	60	Yes	FAC																	
11. <i>Lysichiton americanus</i>	20	No	OBL																	
12.																				
13.																				
14.																				
15.																				
16.																				
17.																				
18.																				
19.																				
20.																				
80 = Total Cover																				
<u>Woody Vine Stratum</u> (Plot Size: 5 foot radius)																				
1.																				
2.																				
0 = Total Cover																				
% Bare Ground in Herb Stratum	20			Hydrophytic Vegetation Indicators: Yes Dominance Test is >50% Prevalence Index is ≤3.0 ¹ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) Wetland Non-Vascular Plants ¹ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>																				
Remarks: 100% dominant wetland vegetation per the Dominance test.																				

SOIL

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type ¹	Loc ²		
0 to 8	10YR 3/1	100	None	None	None	None	Silt loam	
8 to 18+	10YR 5/1	90	10YR 5/6	10	D	M	Silt loam	

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

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

- Histsol (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 Soils³:

- 2 cm Muck (A10)
- Red Parent Material (TF2)
- Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type:

Depth (Inches):

Hydric Soils Present?

Yes No

Remarks: 1 chroma, depletions

HYDROLOGY

Wetland Hydrology Indicators:

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes No Depth (inches):
 Water Table Present? Yes No Depth (inches): 6 inches
 Saturation Present? (includes capillary fringe) Yes No Depth (inches): At surface

Wetland Hydrology Present? Yes No

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

Remarks: Saturation and water table observed in sample plot

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

Project Site: 405 195th to SR 527 City/County: Bothell/King Sampling Date: 3/23/09
 Applicant/Owner: WSDOT State: WA Sampling Point: Wet 25.3L SP#2U
 Investigator(s): C. Douglas, J. Pursley, A. Gale Section, Township, Range: 5, T26N, R5E
 Landform (hillslope, terrace, etc.): Interstate right-of-way Local relief (concave, convex, none): Slope to interstate Slope (%): 3%
 Subregion (LRR): A Lat: 47.46N Long: 122.11W Datum:
 Soil Map Unit Name: Alderwood gravelly sandy loam NWI classification: None mapped
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , Or Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , Or Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Is the Sampling Area within a Wetland?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Wetland Hydrology Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Remarks: Wetland located within Interstate 405 right-of-way, adjacent to paved surfaces of roadway. Wetland located on a slope down to the roadway. Wetland associated with seasonal stream that flows into culvert beneath 405. Wetland extends outside right-of-way.					

VEGETATION – Use scientific names of plants

<u>Tree Stratum</u> (Plot Size: 30 foot radius)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:																
1. <i>Tsuga heterophylla</i>	30	Yes	FACU-	Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A) Total Number of Dominant Species Across All Strata: 4 (B) Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)																
2. <i>Thuja plicata</i>	20	Yes	FAC																	
3. <i>Alnus rubra</i>	10	No	FAC																	
4.																				
60 = Total Cover				Prevalence Index worksheet: <table style="width: 100%; border: none;"> <tr> <td style="text-align: center;"><u>Total % Cover of:</u></td> <td style="text-align: center;"><u>Multiply by:</u></td> </tr> <tr> <td>OBL species</td> <td style="text-align: center;">x1 =</td> </tr> <tr> <td>FACW species</td> <td style="text-align: center;">x2 =</td> </tr> <tr> <td>FAC species</td> <td style="text-align: center;">x3 =</td> </tr> <tr> <td>FACU species</td> <td style="text-align: center;">x4 =</td> </tr> <tr> <td>UPL species</td> <td style="text-align: center;">x5 =</td> </tr> <tr> <td>Column Totals:</td> <td style="text-align: center;">(A) (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A =</td> </tr> </table>	<u>Total % Cover of:</u>	<u>Multiply by:</u>	OBL species	x1 =	FACW species	x2 =	FAC species	x3 =	FACU species	x4 =	UPL species	x5 =	Column Totals:	(A) (B)	Prevalence Index = B/A =	
<u>Total % Cover of:</u>	<u>Multiply by:</u>																			
OBL species	x1 =																			
FACW species	x2 =																			
FAC species	x3 =																			
FACU species	x4 =																			
UPL species	x5 =																			
Column Totals:	(A) (B)																			
Prevalence Index = B/A =																				
<u>Sapling/Shrub Stratum</u> (Plot Size: 15 foot radius)																				
5. <i>Acer circinatum</i>	70	Yes	FAC-																	
6.																				
7.																				
8.																				
9.																				
70 = Total Cover																				
<u>Herb Stratum</u> (Plot Size: 5 foot radius)																				
10. <i>Polystichum munitum</i>	40	Yes	FACU	Hydrophytic Vegetation Indicators: No Dominance Test is >50% Prevalence Index is ≤3.0 ¹ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) 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.																
11.																				
12.																				
13.																				
14.																				
15.																				
16.																				
17.																				
18.																				
19.																				
20.																				
40 = Total Cover																				
<u>Woody Vine Stratum</u> (Plot Size: 5 foot radius)																				
1.																				
2.																				
0 = Total Cover																				
% Bare Ground in Herb Stratum	60			Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>																

Remarks: 50% dominant wetland vegetation per the Dominance test

Wetland name or number 25.3L

WETLAND RATING FORM – WESTERN WASHINGTON
Version 2 – Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): 25.3L Date of site visit: March 23, 2009

Rated by: C. Douglas, J. Pursley, A. Gale Trained by Ecology? Yes X No _____ Date of training: May 2007

SEC: 30 TWNShp: 26N RNgE: 5E Is S/T/R in Appendix D? Yes _____ No X

Map of wetland unit: Figure _____ Estimated size 0.04 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	10
Score for Hydrologic Functions	22
Score for Habitat Functions	13
TOTAL Score for Functions	45

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

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

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

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

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

Classification of Vegetated Wetlands for Western Washington

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

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

NO – go to 2

YES – the wetland class is **Tidal Fringe**

If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?

YES – **Freshwater Tidal Fringe**

NO – **Saltwater Tidal Fringe (Estuarine)**

*If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is a Saltwater Tidal Fringe it is rated as an **Estuarine** wetland. Wetlands that were call estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term “Estuarine” wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p. _____).*

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

NO – go to 3

YES – The wetland class is **Flats**

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

3. Does the entire wetland meet both of the following criteria?

_____ The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) where at least 20 acres (8ha) in size;

_____ At least 30% of the open water area is deeper than 6.6 (2 m)?

NO – go to 4

YES – The wetland class is **Lake-fringe (Lacustrine Fringe)**

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

_____ The wetland is on a slope (*slope can be very gradual*).

_____ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.

_____ The water leaves the wetland **without being impounded?**

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

NO – go to 5

YES – The wetland class is **Slope**

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

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

_____ The overbank flooding occurs at least once every two years.

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

NO – go to 6

YES – The wetland class is **Riverine**

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

NO – go to 7

YES – The wetland class is **Depressional**

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

No – go to 8

YES – The wetland class is **Depressional**

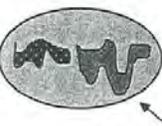
8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. **GO BACK AND IDENTIFY WHICH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

<i>HGM Classes within the wetland unit being rated</i>	<i>HGM Class to Use in Rating</i>
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

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

R Riverine and Freshwater Tidal Fringe Wetlands		Points
WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.		(only 1 score per box)
R 1	Does the wetland have the <u>potential</u> to improve water quality? (see p.52)	
	R 1.1 Area of surface depressions within the riverine wetland that can trap sediments during a flooding event: <ul style="list-style-type: none"> • Depressions cover > 3/4 area of wetland points = 8 • Depressions cover > 1/2 area of wetland points = 4 (If depressions > 1/2 of area of unit draw polygons on aerial photo or map) • Depressions present but cover < 1/2 area of wetland. <u>points = 2</u> • No depressions present points = 0 	Figure ____ 2
	R 1.2 Characteristics of the vegetation in the unit (areas with >90% cover at person height): <ul style="list-style-type: none"> • Trees or shrubs > 2/3 area of the unit points = 8 • Trees or shrubs > 1/3 area of the wetland points = 6 • Ungrazed, herbaceous plants > 2/3 area of unit points = 6 • Ungrazed herbaceous plants > 1/3 area of unit <u>points = 3</u> • Trees, shrubs, and ungrazed herbaceous < 1/3 area of unit points = 0 	Figure ____ 3
Aerial photo or map showing polygons of different vegetation types		
Add the points in the boxes above		5
R 2	Does the wetland have the <u>opportunity</u> to improve water quality?	(see p. 53)
	Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland. <i>Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.</i> <ul style="list-style-type: none"> ___ Grazing in the wetland or within 150 ft <input checked="" type="checkbox"/> Untreated stormwater discharges to wetland ___ Tilled fields or orchards within 150 ft. of wetland <input checked="" type="checkbox"/> A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging <input checked="" type="checkbox"/> Residential, urban areas, golf courses are within 150 ft. of wetland ___ The river or stream linked to the wetland has a contributing basin where human activities have raised levels of sediment, toxic compounds or nutrients in the river water above standards for water quality. ___ Other _____ 	Multiplier <u>2</u>
	<input checked="" type="checkbox"/> YES multiplier is 2 NO multiplier is 1	
◆ TOTAL – Water Quality Functions Multiply the score from R1 by R2; then <i>add score to table on p. 1</i>		10
HYDROLOGIC FUNCTIONS – Indicators that wetland functions to reduce flooding and stream erosion.		
R 3	Does the wetland have the <u>potential</u> to reduce flooding and erosion?	(see p.54)
	R 3.1 Characteristics of the overbank storage the wetland provides: <i>Estimate the average width of the wetland perpendicular to the direction of the flow and the width of the stream or river channel (distance between banks). Calculate the ratio: (average width of unit) / (average width of stream between banks).</i> <ul style="list-style-type: none"> • If the ratio is more than 20..... points = 9 • If the ratio is between 10 – 20..... points = 6 • If the ratio is 5- <10..... <u>points = 4</u> • If the ratio is 1- <5..... points = 2 • If the ratio is < 1 points = 1 	Figure ____ 4
	R 3.2 Characteristics of vegetation that slow down water velocities during floods: <i>Treat large woody debris as "forest or shrub". Choose the points appropriate for the best description. (polygons need to have >90% cover at person height NOT Cowardin classes):</i> <ul style="list-style-type: none"> • Forest or shrub for > 1/3 area OR herbaceous plants > 2/3 area <u>points = 7</u> • Forest or shrub for > 1/10 area OR herbaceous plants > 1/3 area points = 4 • Vegetation does not meet above criteria points = 0 	Figure ____ 7
Aerial photo or map showing polygons of different vegetation types		
Add the points in the boxes above		11
R 4	Does the wetland have the <u>opportunity</u> to reduce flooding and erosion?	(see p.57)
	Answer YES if the wetland is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. <i>Note which of the following conditions apply.</i> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> 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)	Multiplier 2
	<input checked="" type="checkbox"/> YES multiplier is 2 NO multiplier is 1	
◆ TOTAL – Hydrologic Functions Multiply the score from R3 by R4; then <i>add score to table on p. 1</i>		22

Comments:

These questions apply to wetlands of all HGM classes.		Points						
HABITAT FUNCTIONS – Indicators that wetland functions to provide important habitat.		(only 1 score per box)						
H 1	Does the wetland have the <u>potential</u> to provide habitat for many species?							
H 1.1	<p><u>Vegetation structure</u> (see P. 72): Check the types of vegetation classes present (as defined by Cowardin) – Size threshold for each class is 1/4 acre or more than 10% of the area if unit is smaller than 2.5 acres.</p> <p><input type="checkbox"/> Aquatic Bed <input checked="" type="checkbox"/> Emergent plants <input type="checkbox"/> Scrub/shrub (areas where shrubs have > 30% cover) <input checked="" type="checkbox"/> Forested (areas where trees have > 30% cover) If the unit has a forested class check if: <input type="checkbox"/> The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon. Add the number of vegetation types that qualify. If you have:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">4 structures or more..... points = 4</td> <td style="width: 50%;">Map of Cowardin vegetation classes</td> </tr> <tr> <td>2 structures..... points = 1</td> <td>3 structures..... points = 2</td> </tr> <tr> <td></td> <td>1 structure..... points = 0</td> </tr> </table>	4 structures or more..... points = 4	Map of Cowardin vegetation classes	2 structures..... points = 1	3 structures..... points = 2		1 structure..... points = 0	<p>Figure ____</p> <p style="text-align: center;">1</p>
4 structures or more..... points = 4	Map of Cowardin vegetation classes							
2 structures..... points = 1	3 structures..... points = 2							
	1 structure..... points = 0							
H 1.2	<p><u>Hydroperiods</u> (see p.73): Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or 1/4 acre to count (see text for descriptions of hydroperiods).</p> <p><input type="checkbox"/> Permanently flooded or inundated <input checked="" type="checkbox"/> Seasonally flooded or inundated <input type="checkbox"/> Occasionally flooded or inundated <input checked="" type="checkbox"/> Saturated only <input type="checkbox"/> Permanently flowing stream or river in, or adjacent to, the wetland <input checked="" type="checkbox"/> Seasonally flowing stream in, or adjacent to, the wetland <input type="checkbox"/> Lake-fringe wetland..... = 2 points <input type="checkbox"/> Freshwater tidal wetland..... = 2 points</p> <p style="text-align: right;">Map of hydroperiods</p>	<p>Figure ____</p> <p style="text-align: center;">2</p>						
H 1.3	<p><u>Richness of Plant Species</u> (see p. 75): Count the number of plant species in the wetland that cover at least 10 ft² (different patches of the same species can be combined to meet the size threshold) You do not have to name the species. Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle. If you counted: > 19 species points = 2 5 – 19 species..... points = 1 < 5 species points = 0</p> <p>List species below if you want to: _____ _____ _____</p>	<p style="text-align: center;">1</p>						
H 1.4	<p><u>Interspersion of Habitats</u> (see p. 76): Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.</p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;">  <p>None = 0 points</p> </div> <div style="text-align: center;">  <p>Low = 1 point</p> </div> <div style="text-align: center;">  <p>Moderate = 2 points</p> </div> <div style="text-align: center;">  <p style="text-align: center;">High = 3 points</p> </div> </div> <p style="text-align: right;">[riparian braided channels]</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always “high”.</p> <p style="text-align: center;">Use map of Cowardin classes.</p> </div>	<p>Figure ____</p> <p style="text-align: center;">3</p>						
H 1.5	<p><u>Special Habitat Features</u> (see p. 77): Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.</p> <p><input type="checkbox"/> Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft. long) <input type="checkbox"/> Standing snags (diameter at the bottom > 4 inches) in the wetland <input type="checkbox"/> Undercut banks are present for at least 6.6 ft. (2m) and/or overhanging vegetation extends at least 3.3 ft. (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft. (10m) <input type="checkbox"/> Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present (cut shrubs or trees that have not yet turned grey/brown) <input type="checkbox"/> At least 1/4 acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated (structures for egg-laying by amphibians) <input checked="" type="checkbox"/> Invasive plants cover less than 25% of the wetland area in each stratum of plants</p> <p><i>NOTE: The 20% stated in early printings of the manual on page 78 is an error.</i></p>	<p style="text-align: center;">1</p>						
H 1 TOTAL Score – potential for providing habitat		8						

	<p>H 2.3 <u>Near or adjacent to other priority habitats listed by WDFW</u> (see p. 82): Which of the following priority habitats are within 330 ft. (100m) of the wetland? <i>NOTE: the connections do not have to be relatively undisturbed. These are DFW definitions. Check with your local DFW biologist if there are any questions.</i></p> <p>_____ Riparian: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.</p> <p>_____ Aspen Stands: Pure or mixed stands of aspen greater than 0.8 ha (2 acres)</p> <p>_____ Cliffs: Greater than 7.6m (25 ft) high and occurring below 5000 ft.</p> <p>_____ Old-growth 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) > 81cm (32 in) dbh or > 200 years of age.</p> <p>_____ Mature forests: Stands with average diameters exceeding 53cm (21 in) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 – 200 years old west of the Cascade Crest.</p> <p>_____ Prairies: Relatively undisturbed areas (as indicated by dominance of native plants) where greases and/or forbs form the natural climax plant community.</p> <p>_____ Talus: Homogenous areas of rock rubble ranging in average size 0.15 – 2.0m (0.5 – 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.</p> <p>_____ Caves: A naturally occurring cavity, recess, void, or system of interconnected passages.</p> <p>_____ Oregon white Oak: Woodlands stands of pure oak or oak/conifer associations where canopy coverage of the oak component of the stand is 25%.</p> <p>_____ Urban Natural Open Space: A priority species resides within or is adjacent to the open space and uses it for breeding and/or regular feeding; and/or the open space functions as a corridor connecting other <i>priority habitats</i>, especially those that would otherwise be isolated; and/or the open space is an isolated remnant of natural habitat larger than 4 ha (10 acres) and is surrounded by urban development.</p> <p>_____ Estuary/Estuary-like: Deepwater tidal habitats and adjacent tidal wetlands, usually semi-enclosed by land but with open, partly obstructed or sporadic access to the open ocean, and in which ocean water is at least occasionally diluted by freshwater runoff from the land. The salinity may be periodically increased above that of the open ocean by evaporation. Along some low-energy coastlines there is appreciable dilution of sea water. Estuarine habitat extends upstream and landward to where ocean-derived salts measure less than 0.5 ppt. during the period of average annual low flow. Includes both estuaries and lagoons.</p> <p>_____ Marine/Estuarine Shorelines: Shorelines include the intertidal and subtidal zones of beaches, and may also include the backshore and adjacent components of the terrestrial landscape (e.g., cliffs, snags, mature trees, dunes, meadows) that are important to shoreline associated fish and wildlife and that contribute to shoreline function (e.g., sand/rock/log recruitment, nutrient contribution, erosion control).</p> <p>If wetland has 3 or more priority habitats..= 4 points If wetland has 1 priority habit .. = 1 point If wetland has 2 priority habitats.....= 3 points 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).</p>	0
	<p>H 2.4 <u>Wetland Landscape:</u> <i>Choose the one description of the landscape around the wetland that best fits (see p. 84)</i></p> <ul style="list-style-type: none"> • There are at least 3 other wetlands within 1/2 mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development.....points = 5 • The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within 1/2 milepoints = 5 • There are at least 3 other wetlands within 1/2 mile, BUT the connections between them are disturbed. points = 3 • The wetland fringe on a lake with disturbance and there are 3 other lake-fringe wetlands within 1/2 mile.....points = 3 • There is at least 1 wetland within 1/2 milepoints = 2 • There are no wetlands within 1/2 mile.....points = 0 	3
<p>H 2 TOTAL Score – opportunity for providing habitat <i>Add the scores from H2.1, H2.2, H2.3, H2.4</i></p>		5
<p><i>TOTAL for H 1 from page 8</i></p>		8
◆	<p>Total Score for Habitat Functions Add the points for H 1 and H 2; then record the result on p. 1</p>	13

Comments:

Routine Wetland Determination

DATA FORM 1 (Revised)

WA State Wetland Delineation Manual or 1987 Corps Wetland Delineation Manual

Project/Site: <i>520-I-5</i> Applicant/owner: <i>WSDOT</i> Investigator(s): <i>Thiele, Purstey</i>	Date: <i>9/7/06</i> County: <i>Snohomish</i> State: <i>Wash</i> S/T/R: <i>5/26N/SE</i>
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Do normal circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (atypical situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is the area a potential problem area? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Explanation of atypical or problem area: <i>Area is ditched for stormwater conveyance</i>	Community ID: <i>WET</i> Transect ID: Plot ID: <i>25.3R SP#1 (W)</i>
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VEGETATION (For *strata, indicate T = tree; S = shrub; H = herb; V = vine)							
Dominant Plant Species	*Stratum	% cover	Indicator	Dominant Plant Species	*Stratum	% cover	Indicator
<i>Red Alder</i>	<i>T</i>	<i>20</i>	<i>FAC</i>				
<i>Scoulers Willow</i>	<i>T</i>	<i>20</i>	<i>FAC</i>				
<i>Pacific Willow</i>	<i>T</i>	<i>20</i>	<i>FACW</i>				
<i>Himalayan Blackberry</i>	<i>S</i>	<i>40%</i>	<i>FACU</i>				
<i>Reed Canary Grass</i>	<i>H</i>	<i>40%</i>	<i>FACW</i>				
<i>Eg. Giant Horsetail</i>	<i>H</i>	<i>20%</i>	<i>FACW</i>				

HYDROPHYTIC VEGETATION INDICATORS: *40/40 = 100%, S = 40/40 = 100% War Myrtle*
% of dominants OBL, FACW, & FAC: 140/140 = 100% H = 60/6 = 100% in wetland

Check all indicators that apply and explain below:

<input type="checkbox"/> Visual observation of plant species growing in areas of prolonged inundation/saturation	<input type="checkbox"/> Physiological/reproductive adaptations
<input type="checkbox"/> Morphological adaptations	<input checked="" type="checkbox"/> Wetland plant database
<input type="checkbox"/> Technical Literature	<input checked="" type="checkbox"/> Personal knowledge of regional plant communities
	<input type="checkbox"/> Other (explain)

Hydrophytic vegetation present? Yes No
 Rationale for decision/Remarks: *100% Wetland Veg*

HYDROLOGY		
Is it the growing season? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Based on: <input type="checkbox"/> Soil temp (record temp) <input checked="" type="checkbox"/> Other (explain) <i>September</i>	Water Marks: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Drift Lines: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Sediment Deposits: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Drainage Patterns: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Depth of inundation: _____ inches Depth to free water in pit: _____ Depth to saturated soil: _____	Oxidized Root (live roots) Channels <12 in.: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No FAC Neutral: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Local Soil Survey: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Water-stained Leaves: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Check all that apply & explain below:

<input type="checkbox"/> Stream, lake or gage data	Other (explain): <i>A maintained ditch is present adjacent to SP#1. Sediment is present in adjacent parking lot. There is probably ample hydrology during rainier months ditch contains water - no rain in weeks</i>
<input type="checkbox"/> Aerial photographs	
<input type="checkbox"/> Other	

Wetland hydrology present? Yes No
 Rationale for decision/remarks: *Oxidized root channels in soil,*

SOILS

Map Unit Name (Series and Phase):
Yts of silt loam 0 to B₂
 Taxonomy (subgroup): *Slopes*

Drainage Class
 Field observations confirm mapped type? Yes No

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size and contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-2		10YR 4/3	-	-	Silt loam	
8-16		2.5Y 4/2	7.5YR 4/6	Common Large Bright	Clay loam	

Hydric Soil Indicators: (check all that apply)

- Histosol
- Histic Epipedon
- Sulfidic Odor
- Aquic Moisture Regime
- Reducing Conditions
- Gleyed or Low-Chroma (=1) matrix
- Matrix chroma ≤ 2 with mottles
- Mg or Fe Concretions
- High Organic Content in Surface Layer of Sandy Soils
- Organic Streaking in Sandy Soils
- Listed on National/Local Hydric Soils List
- Other (explain in remarks)

Hydric soils present? Yes No

Rationale for decision/Remarks: *Chroma of w/ Bright mottles Below 10 inches*

Wetland Determination

- Hydrophytic vegetation present? Yes No
- Hydric soils present? Yes No
- Wetland hydrology present? Yes No
- Is the sampling point within a wetland? Yes No

Rationale/Remarks: *Area has been altered by stormwater conveyance but still holds wet characters*

NOTES:

Routine Wetland Determination

DATA FORM 1 (Revised)

WA State Wetland Delineation Manual or 1987 Corps Wetland Delineation Manual)

Project/Site: I-5 to S20 Applicant/owner: WSDOT Investigator(s): Thiele, Pursley	Date: 9/7/04 County: Snohomish State: WA S/T/R: S/R26N/SE
Do normal circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (atypical situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is the area a potential problem area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Explanation of atypical or problem area:	Community ID: UP Transect ID: Plot ID: SP#2 25.3R

VEGETATION (For *strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	*Stratum	% cover	Indicator	Dominant Plant Species	*Stratum	% cover	Indicator
Bitter hazelnut	S	30	FACU				
Doug fir	S	60	FACU				
Himalayan Blackberry	S	60	FACU				
Snowberry	S	20	FACU				
Red Canary Grass	H1	20	FACW				
Grant horsetail	H1	20	FACW				

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC: $4/18 = 19\%$

Check all indicators that apply and explain below:

- | | |
|--|--|
| <input type="checkbox"/> Visual observation of plant species growing in areas of prolonged inundation/saturation | <input type="checkbox"/> Physiological/reproductive adaptations |
| <input type="checkbox"/> Morphological adaptations | <input checked="" type="checkbox"/> Wetland plant database |
| <input type="checkbox"/> Technical Literature | <input checked="" type="checkbox"/> Personal knowledge of regional plant communities |
| | <input type="checkbox"/> Other (explain) |

Hydrophytic vegetation present? Yes No

Rationale for decision/Remarks: 19% Wet Veg.

HYDROLOGY

Is it the growing season? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Water Marks: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No on	Sediment Deposits: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Based on: <input type="checkbox"/> Soil temp (record temp) <input checked="" type="checkbox"/> Other (explain) September	Drift Lines: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Drainage Patterns: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Depth of inundation: _____ inches	Oxidized Root (live roots) Channels <12in.: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Local Soil Survey: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Depth to free water in pit: _____	FAC Neutral: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Water-stained Leaves: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Depth to saturated soil: _____	Check all that apply & explain below: <input type="checkbox"/> Stream, lake or gage data <input type="checkbox"/> Aerial photographs <input type="checkbox"/> Other	
Other (explain): Oxidized root channels are present, but with no live roots.		

Wetland hydrology present? Yes No

Rationale for decision/remarks: Area has been drained historically and is now dry

SOILS

Map Unit Name (Series and Phase):

Kitsap silt loam & to 88

Drainage Class

Field observations confirm mapped type? Yes No

Taxonomy (subgroup)

Slopes

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size and contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-8		10YR 3/2	-	-	Silt loam	
8-16		2.5Y 5/2	10YR 4/6	Common large bright	Clay loam	

Hydric Soil Indicators: (check all that apply)

- Histosol
- Histic Epipedon
- Sulfidic Odor
- Aquic Moisture Regime
- Reducing Conditions
- Gleyed or Low-Chroma (=1) matrix
- Matrix chroma ≤ 2 with mottles
- Mg or Fe Concretions
- High Organic Content in Surface Layer of Sandy Soils
- Organic Streaking in Sandy Soils
- Listed on National/Local Hydric Soils List
- Other (explain in remarks)

Hydric soils present? Yes No

Rationale for decision/Remarks: Yes, these soils may be relic hydric

Wetland Determination

- Hydrophytic vegetation present? Yes No
- Hydric soils present? Yes No
- Wetland hydrology present? Yes No
- Is the sampling point within a wetland? Yes No

Rationale/Remarks: 1 of 3 parameters, may be relic soil

NOTES:

Wetland name or number 25.3R

WETLAND RATING FORM – WESTERN WASHINGTON
Version 2 – Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): 25.3R Date of site visit: 9/7/06
 Rated by: Bursley, Thiele Trained by Ecology? Yes No Date of training: May 2005
 SEC: 5 TWNSHP: 26N RNGE: 5E Is S/T/R in Appendix D? Yes No

Map of wetland unit: Figure _____ Estimated size 0.04 acre

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	<u>2</u>
Score for Hydrologic Functions	<u>2</u>
Score for Habitat Functions	<u>11</u>
TOTAL Score for Functions	<u>15</u>

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

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

IV

Summary of basic information about the wetland unit.

Wetland Unit has Special Characteristics		Wetland HGM Class used for Rating	
Estuarine		Depressional	
Natural Heritage Wetland		Riverine	
Bog		Lake-fringe	
Mature Forest		Slope	<input checked="" type="checkbox"/>
Old Growth Forest		Flats	
Coastal Lagoon		Freshwater Tidal	
Interdunal			
<u>None of the above</u>	<u>X</u>	Check if unit has multiple HGM classes present	<input type="checkbox"/>

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

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

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

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

Wetland name or number 25.3R

Classification of Vegetated Wetlands for Western Washington

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

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

NO - go to 2

YES - the wetland class is **Tidal Fringe**

If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?

YES - **Freshwater Tidal Fringe**

NO - **Saltwater Tidal Fringe (Estuarine)**

If your wetland can be classified as a *Freshwater Tidal Fringe* use the forms for *Riverine* wetlands. If it is a *Saltwater Tidal Fringe* it is rated as an *Estuarine* wetland. Wetlands that were call estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p.).

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

NO - go to 3

YES - The wetland class is **Flats**

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

3. Does the entire wetland meet both of the following criteria?

The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) where at least 20 acres (8ha) in size;

At least 30% of the open water area is deeper than 6.6 (2 m)?

NO - go to 4

YES - The wetland class is **Lake-fringe (Lacustrine Fringe)**

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

The wetland is on a slope (*slope can be very gradual*).

The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.

The water leaves the wetland **without being impounded**?

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

NO - go to 5

YES - The wetland class is **Slope**

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

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

The overbank flooding occurs at least once every two years.

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

NO - go to 6

YES - The wetland class is **Riverine**

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

NO - go to 7

YES - The wetland class is **Depressional**

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

No - go to 8

YES - The wetland class is **Depressional**

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

HGM Classes within the wetland unit being rated	HGM Class to Use in Rating
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

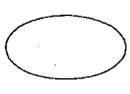
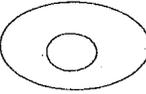
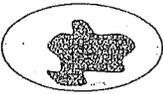
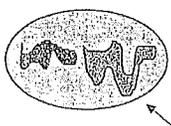
If you are unable still to determine which of the above criteria apply to your wetland, or you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.

Wetland name or number 25,3R

S Slope Wetlands		Points
WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.		(only 1 score per box) (see p.64)
S 1	Does the wetland have the potential to improve water quality?	
S 1.1	Characteristics of average slope of unit: <ul style="list-style-type: none"> Slope is 1% or less (a 1% slope has a 1 ft. vertical drop in elevation for every 100 ft. horizontal distance)..... points = 3 Slope is 1% - 2% points = 2 Slope is 2% - 5% points = 1 Slope is greater than 5% points = 0 	0
S 1.2	The soil 2 inches below the surface (or duff layer) is clay, organic (Use NRCS definitions). YES = 3 points NO = 0 points	0
S 1.3	Characteristics of the vegetation in the wetland that trap sediments and pollutants: Choose the points appropriate for the description that best fits the vegetation in the wetland. Dense vegetation means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 inches. <ul style="list-style-type: none"> Dense, uncut, herbaceous vegetation > 90% of the wetland area points = 6 Dense, uncut, herbaceous vegetation > 1/2 of area points = 3 Dense, woody, vegetation > 1/2 of area points = 2 Dense, uncut, herbaceous vegetation > 1/4 of area points = 1 Does not meet any of the criteria above for vegetation points = 0 	Figure <u> </u> 1
Total for S 1		Add the points in the boxes above 1
S 2	Does the wetland have the opportunity to improve water quality? Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity. <input checked="" type="checkbox"/> Grazing in the wetland or within 150 ft <input checked="" type="checkbox"/> Untreated stormwater discharges to wetland <input checked="" type="checkbox"/> Tilled fields, logging, or orchards within 150 ft. of wetland <input checked="" type="checkbox"/> Residential, urban areas, or golf courses are within 150 ft. upslope of wetland <input type="checkbox"/> Other _____ YES multiplier is 2 NO multiplier is 1	(see p. 67) Multiplier <u>2</u>
◆ TOTAL – Water Quality Functions		Multiply the score from S1 by S2; then add score to table on p. 1 <u>2</u>
HYDROLOGIC FUNCTIONS – Indicators that wetland functions to reduce flooding and stream erosion.		
S 3	Does the wetland have the potential to reduce flooding and stream erosion?	(see p.68)
S 3.1	Characteristics of vegetation that reduce the velocity of surface flows during storms: Choose the points appropriate for the description that best fits conditions in the wetland (stems of plants should be thick enough (usually > 1/8in), or dense enough to remain erect during surface flows). <ul style="list-style-type: none"> Dense, uncut, rigid vegetation covers > 90% of the area of the wetland points = 6 Dense, uncut, rigid vegetation > 1/2 area of wetland points = 3 Dense, uncut, rigid vegetation > 1/4 area points = 1 More than 1/4 of area is grazed, mowed, tilled, or vegetation is not rigid points = 0 	1
S 3.2	Characteristics of slope wetland that holds back small amounts of flood flows. The slope has small surface depressions that can retain water over at least 10% of its area. YES = 2 points NO = 0 points	0
Total for S 3		Add the points in the boxes above 1
S 4	Does the wetland have the opportunity to reduce flooding and erosion? Is the wetland in a landscape position where the reduction in water velocity it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows? Note which of the following conditions apply. <input checked="" type="checkbox"/> Wetland has surface runoff that drains to a river or stream that has flooding problems <input type="checkbox"/> Other _____ (Answer NO if the major source of water is controlled by a reservoir (e.g. wetland is a seep that is on the downstream side of a dam) YES multiplier is 2 NO multiplier is 1	(see p. 70) Multiplier <u>2</u>
◆ TOTAL – Hydrologic Functions		Multiply the score from S3 by S4; then add score to table on p. 1 <u>2</u>

Comments:

Wetland name or number 25.32

These questions apply to wetlands of all HGM classes. HABITAT FUNCTIONS – Indicators that wetland functions to provide important habitat.		Points (only 1 score per box)								
H 1	Does the wetland have the <u>potential</u> to provide habitat for many species?	Figure _____								
	<p>H 1.1 <u>Vegetation structure</u> (see P. 72): Check the types of vegetation classes present (as defined by Cowardin) – Size threshold for each class is 1/4 acre or more than 10% of the area if unit is smaller than 2.5 acres.</p> <p> <input checked="" type="checkbox"/> Aquatic Bed <input checked="" type="checkbox"/> Emergent plants <input checked="" type="checkbox"/> Scrub/shrub (areas where shrubs have > 30% cover) <input checked="" type="checkbox"/> Forested (areas where trees have > 30% cover) </p> <p>If the unit has a forested class check if: _____ The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon. Add the number of vegetation types that qualify. If you have: </p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">4 structures or more.....points = 4</td> <td style="width: 50%; text-align: right;">Map of Cowardin vegetation classes</td> </tr> <tr> <td>2 structures.....points = 1</td> <td style="text-align: right;">3 structures..... points = 2</td> </tr> <tr> <td></td> <td style="text-align: right;">1 structure points = 0</td> </tr> </table>	4 structures or more.....points = 4	Map of Cowardin vegetation classes	2 structures.....points = 1	3 structures..... points = 2		1 structure points = 0	Figure _____ 1		
4 structures or more.....points = 4	Map of Cowardin vegetation classes									
2 structures.....points = 1	3 structures..... points = 2									
	1 structure points = 0									
	<p>H 1.2 <u>Hydroperiods</u> (see p.73): Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or 1/4 acre to count (see text for descriptions of hydroperiods).</p> <p> <input checked="" type="checkbox"/> Permanently flooded or inundated <input checked="" type="checkbox"/> Seasonally flooded or inundated <input checked="" type="checkbox"/> Occasionally flooded or inundated <input checked="" type="checkbox"/> 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 </p> <p style="text-align: right;">Map of hydroperiods</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">4 or more types present</td> <td style="width: 50%; text-align: right;">points = 3</td> </tr> <tr> <td>3 or more types present.....</td> <td style="text-align: right;">points = 2</td> </tr> <tr> <td>2 types present.....</td> <td style="text-align: right;">points = 1</td> </tr> <tr> <td>1 type present.....</td> <td style="text-align: right;">points = 0</td> </tr> </table>	4 or more types present	points = 3	3 or more types present.....	points = 2	2 types present.....	points = 1	1 type present.....	points = 0	Figure _____ 1
4 or more types present	points = 3									
3 or more types present.....	points = 2									
2 types present.....	points = 1									
1 type present.....	points = 0									
	<p>H 1.3 <u>Richness of Plant Species</u> (see p. 75): Count the number of plant species in the wetland that cover at least 10 ft² (different patches of the same species can be combined to meet the size threshold) You do not have to name the species. Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle. If you counted: > 19 species points = 2 5 – 19 species points = 1 < 5 species points = 0</p> <p>List species below if you want to:</p> <p>_____</p> <p>_____</p> <p>_____</p>	Figure _____ 1								
	<p>H 1.4 <u>Interspersion of Habitats</u> (see p. 76): Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.</p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;">  <p>None = 0 points</p> </div> <div style="text-align: center;">  <p>Low = 1 point</p> </div> <div style="text-align: center;">  <p>Moderate = 2 points</p> </div> <div style="text-align: center;">  <p>High = 3 points</p> </div> </div> <p style="text-align: center;">[riparian braided channels]</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always "high".</p> <p style="text-align: right;">Use map of Cowardin classes.</p> </div>	Figure _____ 2								
	<p>H 1.5 <u>Special Habitat Features</u> (see p. 77): Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.</p> <p> _____ Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft. long) _____ Standing snags (diameter at the bottom > 4 inches) in the wetland _____ Undercut banks are present for at least 6.6 ft. (2m) and/or overhanging vegetation extends at least 3.3 ft. (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft. (10m) _____ Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present (cut shrubs or trees that have not yet turned grey/brown) _____ At least 1/4 acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated (structures for egg-laying by amphibians) _____ Invasive plants cover less than 25% of the wetland area in each stratum of plants NOTE: The 20% stated in early printings of the manual on page 78 is an error. </p>	Figure _____ 0								
H 1 TOTAL Score – potential for providing habitat		Add the points in the column above 5								

	<p>H 2.3 <u>Near or adjacent to other priority habitats listed by WDFW</u> (see p. 82): Which of the following priority habitats are within 330 ft. (100m) of the wetland? <i>NOTE: the connections do not have to be relatively undisturbed. These are DFW definitions. Check with your local DFW biologist if there are any questions.</i></p> <p>___ Riparian: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.</p> <p>___ Aspen Stands: Pure or mixed stands of aspen greater than 0.8 ha (2 acres)</p> <p>___ Cliffs: Greater than 7.6m (25 ft) high and occurring below 5000 ft.</p> <p>___ Old-growth 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) > 81cm (32 in) dbh or > 200 years of age.</p> <p>___ Mature forests: Stands with average diameters exceeding 53cm (21 in) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 – 200 years old west of the Cascade Crest.</p> <p>___ Prairies: Relatively undisturbed areas (as indicated by dominance of native plants) where greases and/or forbs form the natural climax plant community.</p> <p>___ Talus: Homogenous areas of rock rubble ranging in average size 0.15 – 2.0m (0.5 – 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.</p> <p>___ Caves: A naturally occurring cavity, recess, void, or system of interconnected passages.</p> <p>___ Oregon white Oak: Woodlands stands of pure oak or oak/conifer associations where canopy coverage of the oak component of the stand is 25%.</p> <p>___ Urban Natural Open Space: A priority species resides within or is adjacent to the open space and uses it for breeding and/or regular feeding; and/or the open space functions as a corridor connecting other <i>priority habitats</i>, especially those that would otherwise be isolated; and/or the open space is an isolated remnant of natural habitat larger than 4 ha (10 acres) and is surrounded by urban development.</p> <p>___ Estuary/Estuary-like: Deepwater tidal habitats and adjacent tidal wetlands, usually semi-enclosed by land but with open, partly obstructed or sporadic access to the open ocean, and in which ocean water is at least occasionally diluted by freshwater runoff from the land. The salinity may be periodically increased above that of the open ocean by evaporation. Along some low-energy coastlines there is appreciable dilution of sea water. Estuarine habitat extends upstream and landward to where ocean-derived salts measure less than 0.5 ppt. during the period of average annual low flow. Includes both estuaries and lagoons.</p> <p>___ Marine/Estuarine Shorelines: Shorelines include the intertidal and subtidal zones of beaches, and may also include the backshore and adjacent components of the terrestrial landscape (e.g., cliffs, snags, mature trees, dunes, meadows) that are important to shoreline associated fish and wildlife and that contribute to shoreline function (e.g., sand/rock/log recruitment, nutrient contribution, erosion control).</p> <p>If wetland has 3 or more priority habitats = 4 points If wetland has 1 priority habit ... = 1 point If wetland has 2 priority habitats = 3 points 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).</p>	
	<p>H 2.4 Wetland Landscape: <i>Choose the one description of the landscape around the wetland that best fits (see p. 84)</i></p> <ul style="list-style-type: none"> • There are at least 3 other wetlands within 1/2 mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development..... points = 5 • The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within 1/2 mile points = 5 • There are at least 3 other wetlands within 1/2 mile, BUT the connections between them are disturbed..... points = 3 • The wetland fringe on a lake with disturbance and there are 3 other lake-fringe wetlands within 1/2 mile..... points = 3 • There is at least 1 wetland within 1/2 mile points = 2 • There are no wetlands within 1/2 mile points = 0 	<p>3</p>
	<p>H 2 TOTAL Score – opportunity for providing habitat <i>Add the scores from H2.1, H2.2, H2.3, H2.4</i></p>	<p>6</p>
		<p>3</p>
<p>◆</p>	<p>Total Score for Habitat Functions <i>Add the points for H 1 and H 2; then record the result on p. 1</i></p>	<p>11</p>

Comments:

Wetland name or number 25.30

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

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

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

Wetland name or number 25.3 R

SC4	<p>Forested Wetlands (see p. 90)</p> <p>Does the wetland have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? <i>If you answer yes you will still need to rate the wetland based on its function.</i></p> <p><input type="checkbox"/> Old-growth forests: (west of Cascade Crest) Stands of at least two three species forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm or more).</p> <p>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.</p> <p><input type="checkbox"/> Mature forests: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have an average diameters (dbh) exceeding 21 inches (53 cm); crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth.</p> <p>YES = Category I NO = <input checked="" type="checkbox"/> not a forested wetland with special characteristics</p>	Cat. I
SC5	<p>Wetlands in Coastal Lagoons (see p. 91)</p> <p>Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?</p> <p><input type="checkbox"/> The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks.</p> <p><input type="checkbox"/> The lagoon in which the wetland is located contains surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon (<i>needs to be measured near the bottom.</i>)</p> <p>YES = Go to SC 5.1 NO = <input type="checkbox"/> not a wetland in a coastal lagoon</p> <p>SC 5.1 Does the wetland meet all of the following three conditions?</p> <p><input type="checkbox"/> 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).</p> <p><input type="checkbox"/> At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland.</p> <p><input type="checkbox"/> The wetland is larger than 1/10 acre (4350 square ft.)</p> <p>YES = Category I NO = Category II</p>	Cat. I Cat. II
SC6	<p>Interdunal Wetlands (see p. 93)</p> <p>Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)?</p> <p>YES = Go to SC 6.1 NO = <input checked="" type="checkbox"/> not an interdunal wetland for rating</p> <p><i>If you answer yes you will still need to rate the wetland based on its functions.</i></p> <p>In practical terms that means the following geographic areas:</p> <ul style="list-style-type: none"> • Long Beach Peninsula -- lands west of SR 103 • Grayland-Westport -- lands west of SR 105 • Ocean Shores-Copalis -- lands west of SR 115 and SR 109 <p>SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is one acre or larger?</p> <p>YES = Category II NO = go to SC 6.2</p> <p>SC 6.2 Is the wetland between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre?</p> <p>YES = Category III</p>	Cat. II Cat. III
◆	<p>Category of wetland based on Special Characteristics</p> <p>Choose the "highest" rating if wetland falls into several categories, and record on p. 1.</p> <p>If you answered NO for all types enter "Not Applicable" on p. 1</p>	

Comments:

Routine Wetland Determination

DATA FORM 1 (Revised)

WA State Wetland Delineation Manual or 1987 Corps Wetland Delineation Manual

Project/Site: <i>I-5 to 520</i> Applicant/owner: <i>WSDOT</i> Investigator(s): <i>Purstep, Thiele</i>	Date: <i>9/7/06</i> County: <i>Snohomish</i> State: <i>WA</i> S/T/R: <i>5126N/SE</i>
Do normal circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (atypical situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is the area a potential problem area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Explanation of atypical or problem area:	Community ID: <i>(W)</i> Transect ID: Plot ID: <i>25.4R SP1</i>

VEGETATION (For *strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	*Stratum	% cover	Indicator	Dominant Plant Species	*Stratum	% cover	Indicator
<i>Red Alder</i>	<i>T</i>	<i>80%</i>	<i>FAC</i>	<i>Piggy Back</i>	<i>H</i>	<i>30</i>	<i>FAC</i>
<i>Salmonberry</i>	<i>S</i>	<i>20</i>	<i>FACV</i>	<i>Trailing Blackberry</i>	<i>H</i>	<i>20</i>	<i>FACV</i>
<i>Demulbaria</i>	<i>S</i>	<i>10</i>	<i>FACV</i>	<i>Lady Fern</i>	<i>H</i>	<i>20</i>	<i>FACV</i>
<i>Himalayan Blackberry</i>	<i>S</i>	<i>20%</i>	<i>FACV</i>				
<i>Evergreen Blackberry</i>	<i>S</i>	<i>20</i>	<i>FACV</i>				
<i>Equisetum Tel</i>	<i>H</i>	<i>20</i>	<i>FACW</i>				

HYDROPHYTIC VEGETATION INDICATORS: $80/80 = 100\%$, $S = 20/60 = 33\%$, $H = 70/90 = 78\%$
 % of dominants OBL, FACW, & FAC: $170/230 = 74\%$

Check all indicators that apply and explain below:

<input type="checkbox"/> Visual observation of plant species growing in areas of prolonged inundation/saturation	<input type="checkbox"/> Physiological/reproductive adaptations
<input type="checkbox"/> Morphological adaptations	<input checked="" type="checkbox"/> Wetland plant database
<input type="checkbox"/> Technical Literature	<input checked="" type="checkbox"/> Personal knowledge of regional plant communities
	<input type="checkbox"/> Other (explain)

Hydrophytic vegetation present? Yes No
 Rationale for decision/Remarks: *74% Wet Veg*

HYDROLOGY

Is it the growing season? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Based on: <input type="checkbox"/> Soil temp (record temp) <input checked="" type="checkbox"/> Other (explain) <i>September</i>	Water Marks: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No on Drift Lines: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Sediment Deposits: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Drainage Patterns: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Depth of inundation: <i>-</i> inches Depth to free water in pit: <i>-</i> Depth to saturated soil: <i>-</i>	Oxidized Root (live roots) Channels <12in.: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No FAC Neutral: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Local Soil Survey: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Water-stained Leaves: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Check all that apply & explain below: <input type="checkbox"/> Stream, lake or gage data <input type="checkbox"/> Aerial photographs <input type="checkbox"/> Other	Other (explain): <i>Part of Alluvial fan. Groundwater is sporadic in places. Highwater table in wetter months is assumed</i>	

Wetland hydrology present? Yes No
 Rationale for decision/remarks:
Alluvial fan = Dynamic hydrologic system that will have a seasonally high water table

SOILS

Map Unit Name (Series and Phase):

Alderwood granully sandy loam
 Taxonomy (subgroup) *8 to 15% slopes*

Drainage Class

Field observations confirm mapped type? Yes No

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size and contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-9		2.5Y 3/2	—	—	Silt loam	
9-16		2.5Y 3/2	10YR 3/6	Common Large	silt loam	

Hydric Soil Indicators: (check all that apply)

- Histosol
- Histic Epipedon
- Sulfidic Odor
- Aquic Moisture Regime
- Reducing Conditions
- Gleyed or Low-Chroma (=1) matrix
- Matrix chroma ≤ 2 with mottles
- Mg or Fe Concretions
- High Organic Content in Surface Layer of Sandy Soils
- Organic Streaking in Sandy Soils
- Listed on National/Local Hydric Soils List
- Other (explain in remarks)

Hydric soils present? Yes No

Rationale for decision/Remarks: *Marginally meets hydric criteria*

Wetland Determination

- Hydrophytic vegetation present? Yes No
- Hydric soils present? Yes No
- Wetland hydrology present? Yes No
- Is the sampling point within a wetland? Yes No

Rationale/Remarks: *3 of 3 parameter*

NOTES:

Routine Wetland Determination

DATA FORM 1 (Revised)

WA State Wetland Delineation Manual or 1987 Corps Wetland Delineation Manual

Project/Site: <u>I-5 - SR520</u> Applicant/owner: <u>WSDOT</u> Investigator(s): <u>Thiele, Pursley</u>	Date: <u>9/7/06</u> County: <u>Strom</u> Shelton <u>Wish</u> State: <u>WA</u> S/I/R: <u>5/26N/5E</u>
Do normal circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (atypical situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is the area a potential problem area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Explanation of atypical or problem area:	Community ID: <u>(UP)</u> Transect ID: Plot ID: <u>SP#2 25.4R</u>

VEGETATION (For *strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	*Stratum	% cover	Indicator	Dominant Plant Species	*Stratum	% cover	Indicator
<u>Red Alder</u>	<u>T</u>	<u>70</u>	<u>FAC</u>	<u>Himalayan Blackberry</u>	<u>H</u>	<u>20</u>	<u>FACV</u>
<u>Salmonberry</u>	<u>S</u>	<u>40</u>	<u>FACW</u>	<u>Herb Robert</u>	<u>H</u>	<u>20</u>	<u>UPL</u>
<u>Red Elderberry</u>	<u>S</u>	<u>20</u>	<u>FACW</u>				
<u>Sword Fern</u>	<u>H</u>	<u>30</u>	<u>FACV</u>				
<u>Lady Fern</u>	<u>H</u>	<u>30</u>	<u>FACW</u>				
<u>Trailing blackberry</u>	<u>H</u>	<u>10</u>	<u>FACV</u>				

HYDROPHYTIC VEGETATION INDICATORS: $70/70 = 100\%$, $40/60 = 67\%$, $H = 3/100 = 3\%$
 % of dominants OBL, FACW, & FAC: $140/230 = 61\%$

Check all indicators that apply and explain below:

<input type="checkbox"/> Visual observation of plant species growing in areas of prolonged inundation/saturation	<input type="checkbox"/> Physiological/reproductive adaptations
<input type="checkbox"/> Morphological adaptations	<input checked="" type="checkbox"/> Wetland plant database
<input type="checkbox"/> Technical Literature	<input checked="" type="checkbox"/> Personal knowledge of regional plant communities
	<input type="checkbox"/> Other (explain)

Hydrophytic vegetation present? Yes No
 Rationale for decision/Remarks: 61% Wet Veg

HYDROLOGY

Is it the growing season? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Based on: <input type="checkbox"/> Soil temp (record temp) <input checked="" type="checkbox"/> Other (explain) <u>September</u>	Water Marks: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No on Drift Lines: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Sediment Deposits: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Drainage Patterns: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Depth of inundation: <u>—</u> inches Depth to free water in pit: <u>—</u> Depth to saturated soil: <u>—</u>	Oxidized Root (live roots) Channels <12 in.: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No FAC Neutral: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Local Soil Survey: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Water-stained Leaves: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Check all that apply & explain below: <input type="checkbox"/> Stream, lake or gage data <input type="checkbox"/> Aerial photographs <input type="checkbox"/> Other	Other (explain):	

Wetland hydrology present? Yes No
 Rationale for decision/remarks: I' topographic break between SP#1 & SP#2 - no hydrology apparent

SOILS

Map Unit Name (Series and Phase):

Drainage Class

Taxonomy (subgroup)

*Alderwood gravelly sandy loam
8 to 15% slopes*

Field observations confirm mapped type? Yes No

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size and contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-6	-	10YR 3/3	-	-	silt loam	
6-14	-	10YR 4/3	10YR 4/4	common faint large	silt loam	

Hydric Soil Indicators: (check all that apply)

- | | |
|---|---|
| <input type="checkbox"/> Histosol | <input type="checkbox"/> Matrix chroma ≤ 2 with mottles |
| <input type="checkbox"/> Histic Epipedon | <input type="checkbox"/> Mg or Fe Concretions |
| <input checked="" type="checkbox"/> Sulfidic Odor | <input type="checkbox"/> High Organic Content in Surface Layer of Sandy Soils |
| <input type="checkbox"/> Aquic Moisture Regime | <input type="checkbox"/> Organic Streaking in Sandy Soils |
| <input type="checkbox"/> Reducing Conditions | <input type="checkbox"/> Listed on National/Local Hydric Soils List |
| <input type="checkbox"/> Gleyed or Low-Chroma (=1) matrix | <input type="checkbox"/> Other (explain in remarks) |

Hydric soils present? Yes No

Rationale for decision/Remarks: *Soils too bright & mottles too faint.*

Wetland Determination

- Hydrophytic vegetation present? Yes No
- Hydric soils present? Yes No
- Wetland hydrology present? Yes No
- Is the sampling point within a wetland? Yes No

Rationale/Remarks: *1 of 3 parameters*

NOTES:

Routine Wetland Determination

DATA FORM 1 (Revised)

WA State Wetland Delineation Manual or 1987 Corps Wetland Delineation Manual

Project/Site: <i>SR 520-I-5</i> Applicant/owner: <i>WSDOT</i> Investigator(s): <i>Thiele, Pursley</i>	Date: <i>9/2/06</i> County: <i>Snohomish</i> State: <i>WA</i> S/I/R: <i>S/26N/5E</i>
Do normal circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (atypical situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is the area a potential problem area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Explanation of atypical or problem area:	Community ID: Transect ID: Plot ID: <i>SP#3 25.4 R</i>

VEGETATION (For *strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	*Stratum	% cover	Indicator	Dominant Plant Species	*Stratum	% cover	Indicator
<i>Red Alder</i>	<i>T</i>	<i>40%</i>	<i>FAC</i>				
<i>Salmonberry</i>	<i>S</i>	<i>30%</i>	<i>FAC</i>				
<i>Himalayan blackberry</i>	<i>S</i>	<i>10%</i>	<i>FACU</i>				
<i>Indian Plum</i>	<i>S</i>	<i>10%</i>	<i>FACU</i>				
<i>Trailing blackberry</i>	<i>H</i>	<i>20</i>	<i>FACU</i>				
<i>Plaggy buck</i>	<i>H</i>	<i>10</i>	<i>FACU</i>				

HYDROPHYTIC VEGETATION INDICATORS: *Barked hazelnut in canopy not rooted in wetland*

% of dominants OBL, FACW, & FAC: *66%*

Check all indicators that apply and explain below:

- | | |
|--|---|
| <input type="checkbox"/> Visual observation of plant species growing in areas of prolonged inundation/saturation | <input type="checkbox"/> Physiological/reproductive adaptations |
| <input type="checkbox"/> Morphological adaptations | <input type="checkbox"/> Wetland plant database |
| <input type="checkbox"/> Technical Literature | <input type="checkbox"/> Personal knowledge of regional plant communities |
| | <input type="checkbox"/> Other (explain) |

Hydrophytic vegetation present? Yes No

Rationale for decision/Remarks: *meets criteria*

HYDROLOGY

Is it the growing season? Yes No

Water Marks: Yes No

Sediment Deposits: Yes No

Based on: Soil temp (record temp)

Drift Lines: Yes No

Drainage Patterns: Yes No

Other (explain) *September*

Depth of inundation: _____ inches

Oxidized Root (live roots)
Channels <12 in.: Yes No

Local Soil Survey: Yes No

Depth to free water in pit: _____

FAC Neutral: Yes No

Water-stained Leaves:
 Yes No

Depth to saturated soil: _____

Check all that apply & explain below:

- Stream, lake or gage data
 Aerial photographs
 Other

Other (explain): *In low spot, but no indicators that water ponds. very close to area w/ groundwater near the surface ~ 20" away*

Wetland hydrology present? Yes No

Rationale for decision/remarks:

No hydrology present

SOILS

Map Unit Name (Series and Phase):

Drainage Class

Alderwood
Taxonomy (subgroup)

gravelly sandy loam, 8 to 15% slopes

Field observations confirm mapped type? Yes No

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size and contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-7		10YR 3/2	—	—	silt loam	
7-13		2.5Y 4/4	—	—	silt loam	

Hydric Soil Indicators: (check all that apply)

- Histosol
- Histic Epipedon
- Sulfidic Odor
- Aquic Moisture Regime
- Reducing Conditions
- Gleyed or Low-Chroma (=1) matrix
- Matrix chroma ≤ 2 with mottles
- Mg or Fe Concretions
- High Organic Content in Surface Layer of Sandy Soils
- Organic Streaking in Sandy Soils
- Listed on National/Local Hydric Soils List
- Other (explain in remarks)

Hydric soils present? Yes No

Rationale for decision/Remarks: *No hydric soils present*

Wetland Determination

- Hydrophytic vegetation present? Yes No
- Hydric soils present? Yes No
- Wetland hydrology present? Yes No
- Is the sampling point within a wetland? Yes No

Rationale/Remarks: *1 of 3 parameters*

NOTES:

Revised 4/97

the ^{Past} delineation shows area in wetland. This does not seem to be the case judging by the soils. The SP is in a small depressional area, but it is inconclusive if the area is ever inundated.

Wetland name or number 25.4R

WETLAND RATING FORM – WESTERN WASHINGTON
Version 2 – Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): 25.4R Date of site visit: 9/7/06

Rated by: Thiele, Trained by Ecology? Yes No Date of training: May 2005

SEC: 5 TOWNSHIP: 26N RANGE: SE Is S/T/R in Appendix D? Yes No

Map of wetland unit: Figure _____ Estimated size 0.22

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	<u>6</u>
Score for Hydrologic Functions	<u>6</u>
Score for Habitat Functions	<u>12</u>
TOTAL Score for Functions	<u>24</u>

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

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

IV

Summary of basic information about the wetland unit.

Wetland Unit has Special Characteristics		Wetland HGM Class used for Rating	
Estuarine		Depressional	
Natural Heritage Wetland		Riverine	
Bog		Lake-fringe	
Mature Forest		Slope	<input checked="" type="checkbox"/>
Old Growth Forest		Flats	
Coastal Lagoon		Freshwater Tidal	
Interdunal			
<u>None of the above</u>	<input checked="" type="checkbox"/>	Check if unit has multiple HGM classes present	<input type="checkbox"/>

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

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

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

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

Wetland name or number 25.4 R

Classification of Vegetated Wetlands for Western Washington

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

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

NO - go to 2

YES - the wetland class is **Tidal Fringe**

If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?

YES - **Freshwater Tidal Fringe**

NO - **Saltwater Tidal Fringe (Estuarine)**

If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is a Saltwater Tidal Fringe it is rated as an **Estuarine** wetland. Wetlands that were 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 only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.

NO - go to 3

YES - The wetland class is **Flats**

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

3. Does the entire wetland meet both of the following criteria?

The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) where at least 20 acres (8ha) in size;

At least 30% of the open water area is deeper than 6.6 (2 m)?

NO - go to 4

YES - The wetland class is **Lake-fringe (Lacustrine Fringe)**

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

The wetland is on a slope (*slope can be very gradual*).

The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.

The water leaves the wetland **without being impounded?**

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

NO - go to 5

YES - The wetland class is **Slope**

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

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

The overbank flooding occurs at least once every two years.

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

NO - go to 6

YES - The wetland class is **Riverine**

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

NO - go to 7

YES - The wetland class is **Depressional**

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

No - go to 8

YES - The wetland class is **Depressional**

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

HGM Classes within the wetland unit being rated	HGM Class to Use in Rating
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

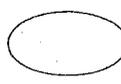
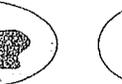
If you are unable still to determine which of the above criteria apply to your wetland, or you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.

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S Slope Wetlands		Points
WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.		(only 1 score per box) (see p.64)
S 1	Does the wetland have the potential to improve water quality?	
S 1.1	Characteristics of average slope of unit: <ul style="list-style-type: none"> • Slope is 1% or less (a 1% slope has a 1 ft. vertical drop in elevation for every 100 ft. horizontal distance)..... points = 3 • Slope is 1% - 2% points = 2 • Slope is 2% - 5% points = 1 • Slope is greater than 5% points = 0 	1
S 1.2	The soil 2 inches below the surface (or duff layer) is clay, organic (Use NRCS definitions). YES = 3 points NO = 0 points	0
S 1.3	Characteristics of the vegetation in the wetland that trap sediments and pollutants: <i>Choose the points appropriate for the description that best fits the vegetation in the wetland. Dense vegetation means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 inches.</i> <ul style="list-style-type: none"> • Dense, uncut, herbaceous vegetation > 90% of the wetland area points = 6 • Dense, uncut, herbaceous vegetation > 1/2 of area points = 3 • Dense, woody, vegetation > 1/2 of area points = 2 • Dense, uncut, herbaceous vegetation > 1/4 of area points = 1 • Does not meet any of the criteria above for vegetation points = 0 <p style="text-align: right;">Aerial photo or map with vegetation polygons</p>	Figure 2
Total for S 1		3
<i>Add the points in the boxes above</i>		
S 2	Does the wetland have the opportunity to improve water quality?	(see p. 67)
<p>Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? <i>Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.</i></p> <p><input checked="" type="checkbox"/> Grazing in the wetland or within 150 ft</p> <p><input checked="" type="checkbox"/> Untreated stormwater discharges to wetland</p> <p><input checked="" type="checkbox"/> Tilled fields, logging, or orchards within 150 ft. of wetland</p> <p><input type="checkbox"/> Residential, urban areas, or golf courses are within 150 ft. upslope of wetland</p> <p><input type="checkbox"/> Other _____</p> <p style="text-align: center;">YES multiplier is 2 NO multiplier is 1</p>		Multiplier 2
◆ TOTAL – Water Quality Functions		6
Multiply the score from S1 by S2; then add score to table on p. 1		
HYDROLOGIC FUNCTIONS – Indicators that wetland functions to reduce flooding and stream erosion.		
S 3	Does the wetland have the potential to reduce flooding and stream erosion?	(see p.68)
S 3.1	Characteristics of vegetation that reduce the velocity of surface flows during storms: <i>Choose the points appropriate for the description that best fits conditions in the wetland (stems of plants should be thick enough (usually > 1/8in), or dense enough to remain erect during surface flows).</i> <ul style="list-style-type: none"> • Dense, uncut, rigid vegetation covers > 90% of the area of the wetland points = 6 • Dense, uncut, rigid vegetation > 1/2 area of wetland points = 3 • Dense, uncut, rigid vegetation > 1/4 area points = 1 • More than 1/4 of area is grazed, mowed, tilled, or vegetation is not rigid points = 0 	3
S 3.2	Characteristics of slope wetland that holds back small amounts of flood flows. The slope has small surface depressions that can retain water over at least 10% of its area. YES = 2 points NO = 0 points	0
<i>Add the points in the boxes above</i>		3
S 4	Does the wetland have the opportunity to reduce flooding and erosion?	(see p. 70)
<p>Is the wetland in a landscape position where the reduction in water velocity it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows? <i>Note which of the following conditions apply.</i></p> <p><input type="checkbox"/> Wetland has surface runoff that drains to a river or stream that has flooding problems</p> <p><input type="checkbox"/> Other _____</p> <p><i>(Answer NO if the major source of water is controlled by a reservoir (e.g. wetland is a seep that is on the downstream side of a dam)</i></p> <p style="text-align: center;">YES multiplier is 2 NO multiplier is 1</p>		Multiplier 2
◆ TOTAL – Hydrologic Functions		6
Multiply the score from S3 by S4; then add score to table on p. 1		

Comments:

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These questions apply to wetlands of all HGM classes.		Points											
HABITAT FUNCTIONS – Indicators that wetland functions to provide important habitat.		(only 1 score per box)											
H 1	Does the wetland have the potential to provide habitat for many species?												
H 1.1	<p><u>Vegetation structure</u> (see P. 72): Check the types of vegetation classes present (as defined by Cowardin) – Size threshold for each class is 1/4 acre or more than 10% of the area if unit is smaller than 2.5 acres.</p> <p><input checked="" type="checkbox"/> Aquatic Bed <input checked="" type="checkbox"/> Emergent plants <input checked="" type="checkbox"/> Scrub/shrub (areas where shrubs have > 30% cover) <input checked="" type="checkbox"/> Forested (areas where trees have > 30% cover)</p> <p>If the unit has a forested class check if: <input type="checkbox"/> The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon. Add the number of vegetation types that qualify. If you have: <table style="display: inline-table; vertical-align: top; margin-left: 20px;"> <tr> <td>4 structures or more.....</td> <td>points = 4</td> <td>Map of Cowardin vegetation classes</td> </tr> <tr> <td>3 structures.....</td> <td>points = 2</td> <td>3 structures.....</td> <td>points = 2</td> </tr> <tr> <td>2 structures.....</td> <td>points = 1</td> <td>1 structure.....</td> <td>points = 0</td> </tr> </table> </p>	4 structures or more.....	points = 4	Map of Cowardin vegetation classes	3 structures.....	points = 2	3 structures.....	points = 2	2 structures.....	points = 1	1 structure.....	points = 0	Figure <u> </u> <u>1</u>
4 structures or more.....	points = 4	Map of Cowardin vegetation classes											
3 structures.....	points = 2	3 structures.....	points = 2										
2 structures.....	points = 1	1 structure.....	points = 0										
H 1.2	<p><u>Hydroperiods</u> (see p. 73): Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or 1/4 acre to count (see text for descriptions of hydroperiods).</p> <p><input checked="" type="checkbox"/> Permanently flooded or inundated <input checked="" type="checkbox"/> Seasonally flooded or inundated <input checked="" type="checkbox"/> Occasionally flooded or inundated <input checked="" type="checkbox"/> Saturated only <input type="checkbox"/> Permanently flowing stream or river in, or adjacent to, the wetland <input type="checkbox"/> Seasonally flowing stream in, or adjacent to, the wetland <input type="checkbox"/> Lake-fringe wetland..... = 2 points <input type="checkbox"/> Freshwater tidal wetland..... = 2 points</p> <p style="text-align: right;">Map of hydroperiods</p>	Figure <u> </u> <u>1</u>											
H 1.3	<p><u>Richness of Plant Species</u> (see p. 75): Count the number of plant species in the wetland that cover at least 10 ft² (different patches of the same species can be combined to meet the size threshold) You do not have to name the species. Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle.</p> <p>If you counted: > 19 species points = 2 5 – 19 species points = 1 < 5 species points = 0</p> <p>List species below if you want to: _____ _____ _____</p>	<u>1</u>											
H 1.4	<p><u>Interspersion of Habitats</u> (see p. 76): Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.</p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;">  None = 0 points </div> <div style="text-align: center;">  Low = 1 point </div> <div style="text-align: center;">  Moderate = 2 points </div> <div style="text-align: center;">  High = 3 points </div> </div> <p style="text-align: center;">[riparian braided channels]</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always “high”.</p> <p>Use map of Cowardin classes.</p> </div>	Figure <u> </u> <u>2</u>											
H 1.5	<p><u>Special Habitat Features</u> (see p. 77): Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.</p> <p><input checked="" type="checkbox"/> Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft. long) <input type="checkbox"/> Standing snags (diameter at the bottom > 4 inches) in the wetland <input type="checkbox"/> Undercut banks are present for at least 6.6 ft. (2m) and/or overhanging vegetation extends at least 3.3 ft. (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft. (10m) <input type="checkbox"/> Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present (cut shrubs or trees that have not yet turned grey/brown) <input type="checkbox"/> At least 1/4 acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated (structures for egg-laying by amphibians) <input type="checkbox"/> Invasive plants cover less than 25% of the wetland area in each stratum of plants</p> <p>NOTE: The 20% stated in early printings of the manual on page 78 is an error.</p>	<u>1</u>											
H 1 TOTAL Score – potential for providing habitat		<u>6</u>											
Add the points in the column above													

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	<p>H 2.3 <u>Near or adjacent to other priority habitats listed by WDFW</u> (see p. 82): Which of the following priority habitats are within 330 ft. (100m) of the wetland? <i>NOTE: the connections do not have to be relatively undisturbed. These are DFW definitions. Check with your local DFW biologist if there are any questions.</i></p> <p>___ Riparian: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.</p> <p>___ Aspen Stands: Pure or mixed stands of aspen greater than 0.8 ha (2 acres)</p> <p>___ Cliffs: Greater than 7.6m (25 ft) high and occurring below 5000 ft.</p> <p>___ Old-growth 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) > 81cm (32 in) dbh or > 200 years of age.</p> <p>___ Mature forests: Stands with average diameters exceeding 53cm (21 in) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 – 200 years old west of the Cascade Crest.</p> <p>___ Prairies: Relatively undisturbed areas (as indicated by dominance of native plants) where greases and/or forbs form the natural climax plant community.</p> <p>___ Talus: Homogenous areas of rock rubble ranging in average size 0.15 – 2.0m (0.5 – 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.</p> <p>___ Caves: A naturally occurring cavity, recess, void, or system of interconnected passages.</p> <p>___ Oregon white Oak: Woodlands stands of pure oak or oak/conifer associations where canopy coverage of the oak component of the stand is 25%.</p> <p>___ Urban Natural Open Space: A priority species resides within or is adjacent to the open space and uses it for breeding and/or regular feeding; and/or the open space functions as a corridor connecting other <i>priority habitats</i>, especially those that would otherwise be isolated; and/or the open space is an isolated remnant of natural habitat larger than 4 ha (10 acres) and is surrounded by urban development.</p> <p>___ Estuary/Estuary-like: Deepwater tidal habitats and adjacent tidal wetlands, usually semi-enclosed by land but with open, partly obstructed or sporadic access to the open ocean, and in which ocean water is at least occasionally diluted by freshwater runoff from the land. The salinity may be periodically increased above that of the open ocean by evaporation. Along some low-energy coastlines there is appreciable dilution of sea water. Estuarine habitat extends upstream and landward to where ocean-derived salts measure less than 0.5 ppt. during the period of average annual low flow. Includes both estuaries and lagoons.</p> <p>___ Marine/Estuarine Shorelines: Shorelines include the intertidal and subtidal zones of beaches, and may also include the backshore and adjacent components of the terrestrial landscape (e.g., cliffs, snags, mature trees, dunes, meadows) that are important to shoreline associated fish and wildlife and that contribute to shoreline function (e.g., sand/rock/log recruitment, nutrient contribution, erosion control).</p> <p>If wetland has 3 or more priority habitats = 4 points If wetland has 1 priority habit ... = 1 point If wetland has 2 priority habitats = 3 points 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).</p>	
	<p>H 2.4 <u>Wetland Landscape:</u> <i>Choose the one description of the landscape around the wetland that best fits (see p. 84)</i></p> <ul style="list-style-type: none"> • There are at least 3 other wetlands within 1/2 mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development..... points = 5 • The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within 1/2 mile points = 5 • There are at least 3 other wetlands within 1/2 mile, BUT the connections between them are disturbed. points = 3 • The wetland fringe on a lake with disturbance and there are 3 other lake-fringe wetlands within 1/2 mile..... points = 3 • There is at least 1 wetland within 1/2 mile points = 2 • There are no wetlands within 1/2 mile points = 0 	<p>3</p>
	<p>H 2 TOTAL Score – opportunity for providing habitat Add the scores from H2.1, H2.2, H2.3, H2.4</p>	<p>6</p>
	<p>TOTAL for H 1 from page 8</p>	<p>6</p>
<p>◆ Total Score for Habitat Functions</p>	<p>Add the points for H 1 and H 2; then <i>record the result on p. 1</i></p>	<p>12</p>

Comments:

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CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

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

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

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SC4	<p>Forested Wetlands (see p. 90)</p> <p>Does the wetland have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? <i>If you answer yes you will still need to rate the wetland based on its function.</i></p> <p>___ Old-growth forests: (west of Cascade Crest) Stands of at least two three species forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm or more).</p> <p>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.</p> <p>___ Mature forests: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have an average diameters (dbh) exceeding 21 inches (53 cm); crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth.</p> <p>YES = Category I NO = <input checked="" type="checkbox"/> not a forested wetland with special characteristics</p>	Cat. I
SC5	<p>Wetlands in Coastal Lagoons (see p. 91)</p> <p>Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?</p> <p>___ 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.</p> <p>___ The lagoon in which the wetland is located contains surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon (<i>needs to be measured near the bottom.</i>)</p> <p>YES = Go to SC 5.1 NO = <input checked="" type="checkbox"/> not a wetland in a coastal lagoon</p> <p>SC 5.1 Does the wetland meet all of the following three conditions?</p> <p>___ 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).</p> <p>___ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland.</p> <p>___ The wetland is larger than 1/10 acre (4350 square ft.)</p> <p>YES = Category I NO = Category II</p>	Cat. I Cat. II
SC6	<p>Interdunal Wetlands (see p. 93)</p> <p>Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)?</p> <p>YES = Go to SC 6.1 NO = <input checked="" type="checkbox"/> not an interdunal wetland for rating</p> <p><i>If you answer yes you will still need to rate the wetland based on its functions.</i></p> <p>In practical terms that means the following geographic areas:</p> <ul style="list-style-type: none"> • Long Beach Peninsula -- lands west of SR 103 • Grayland-Westport -- lands west of SR 105 • Ocean Shores-Copalis -- lands west of SR 115 and SR 109 <p>SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is one acre or larger?</p> <p>YES = Category II NO = go to SC 6.2</p> <p>SC 6.2 Is the wetland between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre?</p> <p>YES = Category III</p>	Cat. II Cat. III
◆	<p>Category of wetland based on Special Characteristics</p> <p>Choose the "highest" rating if wetland falls into several categories, and record on p. 1. If you answered NO for all types enter "Not Applicable" on p. 1</p>	N/A

Comments:

APPENDIX C WETLAND SUMMARIES

East Lake Washington Basin

Wetland 16.2R was partially delineated and mapped as part of the Kirkland Nickel Project (WSDOT 2005a, 2005b). The remainder of the wetland boundary was delineated as part of the Bellevue to Lynnwood Improvement Project. Wetland 16.2R is a 3.01-acre forested and emergent wetland dominated by black cottonwood (*Populus balsamifera*), red alder (*Alnus rubra*), salmonberry (*Rubus spectabilis*), lady fern (*Athyrium filix-femina*), and skunk cabbage (*Lysichitum americanum*). Wetland 16.2R is hydrologically connected to Yarrow Creek via culverts beneath the road.

Forbes Creek Basin

Wetland 19.7R is a 0.14-acre scrub-shrub wetland dominated by Pacific willow (*Salix lasiandra*), spirea, Himalayan blackberry (*Rubus armenianicus*), reed canarygrass (*Phalaris arundinacea*), and bentgrass (*Agrostis* sp.).

Juanita Creek Basin

Wetland 19.8L is a 0.34-acre emergent wetland dominated by reed canarygrass and Himalayan blackberry, with bentgrass also occurring. Wetland 19.9L is a linear shaped, 0.27-acre forested wetland dominated by red alder, bentgrass, and reed canarygrass with willow and Himalayan blackberry also occurring. Wetland 20.0L is a linear shaped, 0.08-acre emergent wetland dominated by reed canarygrass and soft rush (*Juncus effusus*). Wetland 20.34L is a 0.28-acre emergent wetland dominated by reed canarygrass, soft rush, and common cattail with bentgrass and water foxtail (*Alopecurus geniculatus*) also occurring and red alder located along the perimeter. Wetland 20.35L is a 0.17-acre emergent wetland located adjacent to a stormwater detention pond, and dominated by bentgrass and reed canarygrass with Pacific willow also occurring.

Wetland 20.4L is a 2.76-acre scrub-shrub wetland connected to Juanita Creek via culverts and dominated by black cottonwood, Pacific willow, reed canarygrass, and common cattail.

Wetland 21.4M is a 0.05-acre forested wetland dominated by red alder, Himalayan blackberry, small-fruited bulrush (*Scirpus microcarpus*), and giant horsetail (*Equisetum telmateia*). Wetland 21.4M is hydrologically connected to Stream C29 that flows through a pipe beneath northbound (NB) I-405. About 45 percent of Wetland 21.4M was disturbed as part of the Kirkland Nickel Project. Wetland 21.5M is a 0.10-acre forested and emergent wetland dominated by red alder, Himalayan blackberry, small-fruited bulrush, and giant horsetail. About 57 percent of Wetland 21.5M was disturbed as part of the Kirkland Nickel Project. Wetland 21.5R is an approximately 0.23-acre forested and emergent wetland dominated by red alder, salmonberry, giant horsetail, and lady fern. Wetland 21.5R extends approximately 30 feet east of the Washington State Department of Transportation (WSDOT) right-of-way and was only delineated to the WSDOT right-of-way boundary due to limitations associated with right-of-entry and because the project design does not extend outside the WSDOT right-of-way in this portion of the study area. The

estimated size of Wetland 21.5R is based on observations made during the wetland delineation. Wetland 22.5L is a 4.08-acre forested wetland dominated by red alder, Himalayan blackberry, and willow.

Sammamish River Basin

Wetland 22.8L is a 1.02-acre forested wetland dominated by Pacific willow, black cottonwood, and salmonberry, with reed canarygrass also occurring. Wetland 22.8R is a ditch-associated 0.02-acre emergent wetland connected to an unnamed tributary to the Sammamish River; dominated by reed canarygrass and lady fern. Wetland 23.4R is a 0.08-acre forested wetland dominated by Himalayan blackberry and big-leaf maple (*Acer macrophyllum*), with some skunk cabbage present in areas of standing water throughout the wetland. Big-leaf maple provides cover for the wetland, although it is rooted outside of the wetland boundary. Wetland 23.5R is a 0.24-acre forested and emergent wetland dominated by red alder, salmonberry, giant horsetail, and lady fern.

North Creek Basin

Wetland 25.2L is a 0.30-acre wetland located adjacent to southbound (SB) I-405 and dominated by Himalayan blackberry and salmonberry. A small portion of the wetland is located within the WSDOT right-of-way. Wetland 25.22L is a 0.15-acre wetland located adjacent to SB I-405. Wetland 25.22L is located entirely within the WSDOT right-of-way and dominated by salmonberry and piggyback plant (*Tolmiea menziesii*). Wetland 25.3R is a 0.04-acre forested wetland dominated by red alder, Himalayan blackberry, and willow, and also includes reed canarygrass and giant horsetail. Wetland 25.3L is a 0.04-acre wetland located adjacent to SB I-405. Wetland 25.3L is located entirely within the WSDOT right-of-way and dominated by skunk cabbage, red alder, and piggyback plant. Wetland 25.4R is a 0.22-acre forested wetland dominated by red alder, Himalayan blackberry, and salmonberry, with giant horsetail also occurring. Both Wetlands 25.3R and 25.4R are located at the toe of slope of the I-405 right-of-way and have associated ditch-like channels that flow into culverts beneath Fitzgerald Road, indicating a potential seasonal hydrologic connection with North Creek, which is located about 500 feet east of Fitzgerald Road.

APPENDIX D STREAM HABITAT SURVEY RESULTS

I-405, BELLEVUE TO LYNNWOOD IMPROVEMENT PROJECT
ECOSYSTEMS DISCIPLINE REPORT

Stream 64 - East of I-405
Stream Habitat Survey Summary Sheet

Large Woody Debris Metrics		In-Stream Habitat Type Metrics	
Channel Zone 1 - Number of LWD	0	Stream Discharge	0
Channel Zone 1 - % of total LWD		HUs Per KM	65.6167979
Channel Zone 2 - Number of LWD		Pools per KM	0
Channel Zone 2 - % of total LWD		Mean Residual Pool Depth	0
Channel Zone 3 - Number of LWD		SD of Residual Pool Depth	0
Channel Zone 3 - % of total LWD		Mean Channel Alteration	
Total number of LWD		Mean Left Bank Stability	
Number of Key LWD Pieces		Mean Right Bank Stability	
% Key LWD Pieces		Mean Bank Stability	
LWD Pieces per KM		Mean Left Bank Vegetative Protection	
		Mean Right Bank Vegetative Protection	
		Mean Vegetative Protection Overall	
Existing Stream Geomorphology Metrics		Mean Left Bank Riparian Zone Width	
Mean Wetted Width	0.5588	Mean Right Bank Riparian Zone Width	
Mean Bankfull Width	0.5588	Mean Riparian Zone Width	
Mean Bankfull Height	0.1016		
Mean Stream Depth	0		
Mean Reach Slope	4%	Substrate Composition Metrics	
Mean Left Bank Angle	90°	Dominant Substrate Class Size	SA
Mean Right Bank Angle	90°	% Bedrock (smooth)	
SD of Wetted Width		% Boulder (250 to 4000 MM)	
SD of Bankfull Width		% Cobble (64 to 255 MM)	
SD of Bankfull Height		% Coarse Gravel (16 to 64 MM)	
SD of Stream Depth		% Fine Gravel (2 to 16 MM)	
SD of Left Bank Angle		% Sand (.06 to 2 MM)	100%
SD of Right Bank Angle		% Silt/Sand/Muck	
Total Stream Length Surveyed	0.01524	% Hardpan	
		% Wood	
		% Other	
Quality of Pool Metrics		Mean % Embeddedness	100%
Mean Pool Quality Index	NA	SD of % Embeddedness	0%
SD of Pool Quality Index	NA		
Total Number of Pools	0		
		Riparian Vegetation Metrics	
Canopy Cover Measurements		Avg Canopy Vegetation Cover Code	4
% Canopy Cover	100%	Avg Mid Layer Vegetation Cover Code	3.5

Stream 66 - West of I-405
Stream Habitat Survey Summary Sheet

Large Woody Debris Metrics		In-Stream Habitat Type Metrics	
Channel Zone 1 - Number of LWD		Stream Discharge	0
Channel Zone 1 - % of total LWD		HUs Per KM	21.87226597
Channel Zone 2 - Number of LWD		Pools per KM	0
Channel Zone 2 - % of total LWD		Mean Residual Pool Depth	0
Channel Zone 3 - Number of LWD		SD of Residual Pool Depth	0
Channel Zone 3 - % of total LWD		Mean Channel Alteration	
Total number of LWD		Mean Left Bank Stability	
Number of Key LWD Pieces		Mean Right Bank Stability	
% Key LWD Pieces		Mean Bank Stability	
LWD Pieces per KM		Mean Left Bank Vegetative Protection	
		Mean Right Bank Vegetative Protection	
		Mean Vegetative Protection Overall	
Existing Stream Geomorphology Metrics		Mean Left Bank Riparian Zone Width	
Mean Wetted Width	0.338666667	Mean Right Bank Riparian Zone Width	
Mean Bankfull Width	0.635	Mean Riparian Zone Width	
Mean Bankfull Height	0.118533333		
Mean Stream Depth	2.54		
Mean Reach Slope	5%	Substrate Composition Metrics	
Mean Left Bank Angle	20°	Dominant Substrate Class Size	GC
Mean Right Bank Angle	87°	% Bedrock (smooth)	
SD of Wetted Width	0.114534944	% Boulder (250 to 4000 MM)	
SD of Bankfull Width	0.571923177	% Cobble (64 to 255 MM)	13%
SD of Bankfull Height	0.029329394	% Coarse Gravel (16 to 64 MM)	47%
SD of Stream Depth	2.199704526	% Fine Gravel (2 to 16 MM)	13%
SD of Left Bank Angle	113°	% Sand (.06 to 2 MM)	27%
SD of Right Bank Angle	06°	% Silt/Sand/Muck	
Total Stream Length Surveyed	0.04572	% Hardpan	
		% Wood	
		% Other	
Quality of Pool Metrics		Mean % Embeddedness	37%
Mean Pool Quality Index		SD of % Embeddedness	40%
SD of Pool Quality Index			
Total Number of Pools			
		Riparian Vegetation Metrics	
Canopy Cover Measurements		% Canopy Vegetation Cover	1
% Canopy Cover	72%	% Mid Layer Vegetation Cover	1.833333333

Stream 66 - West of I-405a
Stream Habitat Survey Summary Sheet

Large Woody Debris Metrics		In-Stream Habitat Type Metrics	
Channel Zone 1 - Number of LWD		Stream Discharge	0
Channel Zone 1 - % of total LWD		HUs Per KM	
Channel Zone 2 - Number of LWD		Pools per KM	
Channel Zone 2 - % of total LWD		Mean Residual Pool Depth	0
Channel Zone 3 - Number of LWD		SD of Residual Pool Depth	0
Channel Zone 3 - % of total LWD		Mean Channel Alteration	
Total number of LWD		Mean Left Bank Stability	
Number of Key LWD Pieces		Mean Right Bank Stability	
% Key LWD Pieces		Mean Bank Stability	
LWD Pieces per KM		Mean Left Bank Vegetative Protection	
		Mean Right Bank Vegetative Protection	
		Mean Vegetative Protection Overall	
Existing Stream Geomorphology Metrics		Mean Left Bank Riparian Zone Width	
Mean Wetted Width	0.0762	Mean Right Bank Riparian Zone Width	
Mean Bankfull Width	0.1651	Mean Riparian Zone Width	
Mean Bankfull Height	0.0635		
Mean Stream Depth	0		
Mean Reach Slope	0%	Substrate Composition Metrics	
Mean Left Bank Angle	45°	Dominant Substrate Class Size	SA
Mean Right Bank Angle	60°	% Bedrock (smooth)	
SD of Wetted Width	0.107763073	% Boulder (250 to 4000 MM)	
SD of Bankfull Width	0.089802561	% Cobble (64 to 255 MM)	
SD of Bankfull Height	0.017960512	% Coarse Gravel (16 to 64 MM)	
SD of Stream Depth	0	% Fine Gravel (2 to 16 MM)	20%
SD of Left Bank Angle	21°	% Sand (.06 to 2 MM)	80%
SD of Right Bank Angle	42°	% Silt/Sand/Muck	
Total Stream Length Surveyed	0	% Hardpan	
		% Wood	
		% Other	
Quality of Pool Metrics		Mean % Embeddedness	75%
Mean Pool Quality Index	NA	SD of % Embeddedness	41%
SD of Pool Quality Index	NA		
Total Number of Pools	0		
		Riparian Vegetation Metrics	
Canopy Cover Measurements		Avg Canopy Vegetation Cover Code	1.75
% Canopy Cover	99%	Avg Mid Layer Vegetation Cover Code	2.25

Stream 66 - East of I-405
Stream Habitat Survey Summary Sheet

Large Woody Debris Metrics		In-Stream Habitat Type Metrics	
Channel Zone 1 - Number of LWD		Stream Discharge	0
Channel Zone 1 - % of total LWD		HUs Per KM	131.2335958
Channel Zone 2 - Number of LWD		Pools per KM	0
Channel Zone 2 - % of total LWD		Mean Residual Pool Depth	0
Channel Zone 3 - Number of LWD		SD of Residual Pool Depth	0
Channel Zone 3 - % of total LWD		Mean Channel Alteration	
Total number of LWD		Mean Left Bank Stability	
Number of Key LWD Pieces		Mean Right Bank Stability	
% Key LWD Pieces		Mean Bank Stability	
LWD Pieces per KM		Mean Left Bank Vegetative Protection	
		Mean Right Bank Vegetative Protection	
		Mean Vegetative Protection Overall	
Existing Stream Geomorphology Metrics		Mean Left Bank Riparian Zone Width	
Mean Wetted Width	0.4191	Mean Right Bank Riparian Zone Width	
Mean Bankfull Width	1.0668	Mean Riparian Zone Width	
Mean Bankfull Height	0.254		
Mean Stream Depth	2.54		
Mean Reach Slope	2%	Substrate Composition Metrics	
Mean Left Bank Angle	60°	Dominant Substrate Class Size	SA
Mean Right Bank Angle	90°	% Bedrock (smooth)	
SD of Wetted Width	0.053881537	% Boulder (250 to 4000 MM)	
SD of Bankfull Width	0.071842049	% Cobble (64 to 255 MM)	20%
SD of Bankfull Height	0.143684098	% Coarse Gravel (16 to 64 MM)	
SD of Stream Depth		% Fine Gravel (2 to 16 MM)	30%
SD of Left Bank Angle	42°	% Sand (.06 to 2 MM)	50%
SD of Right Bank Angle	00°	% Silt/Sand/Muck	
Total Stream Length Surveyed	0.03048	% Hardpan	
		% Wood	
		% Other	
Quality of Pool Metrics		Mean % Embeddedness	68%
Mean Pool Quality Index		SD of % Embeddedness	36%
SD of Pool Quality Index			
Total Number of Pools	2	Riparian Vegetation Metrics	
		Avg Canopy Vegetation Cover Code	1.5
Canopy Cover Measurements		Avg Mid Layer Vegetation Cover Code	1.75
% Canopy Cover	87%		

Stream 71-70
Stream Habitat Survey Summary Sheet

Large Woody Debris Metrics		In-Stream Habitat Type Metrics	
Channel Zone 1 - Number of LWD		Stream Discharge	0
Channel Zone 1 - % of total LWD		HUs Per KM	32.80839895
Channel Zone 2 - Number of LWD		Pools per KM	0
Channel Zone 2 - % of total LWD		Mean Residual Pool Depth	0
Channel Zone 3 - Number of LWD		SD of Residual Pool Depth	0
Channel Zone 3 - % of total LWD		Mean Channel Alteration	
Total number of LWD		Mean Left Bank Stability	
Number of Key LWD Pieces		Mean Right Bank Stability	
% Key LWD Pieces		Mean Bank Stability	
LWD Pieces per KM	0	Mean Left Bank Vegetative Protection	
		Mean Right Bank Vegetative Protection	
		Mean Vegetative Protection Overall	
Existing Stream Geomorphology Metrics		Mean Left Bank Riparian Zone Width	
Mean Wetted Width	0	Mean Right Bank Riparian Zone Width	
Mean Bankfull Width	0.9144	Mean Riparian Zone Width	
Mean Bankfull Height	0.1143		
Mean Stream Depth	0		
Mean Reach Slope	2%	Substrate Composition Metrics	
Mean Left Bank Angle	70°	Dominant Substrate Class Size	SA
Mean Right Bank Angle	70°	% Bedrock (smooth)	
SD of Wetted Width	NA	% Boulder (250 to 4000 MM)	20%
SD of Bankfull Width	0	% Cobble (64 to 255 MM)	20%
SD of Bankfull Height	0.017960512	% Coarse Gravel (16 to 64 MM)	10%
SD of Stream Depth	0	% Fine Gravel (2 to 16 MM)	
SD of Left Bank Angle	14°	% Sand (.06 to 2 MM)	50%
SD of Right Bank Angle	00°	% Silt/Sand/Muck	
Total Stream Length Surveyed	0.03048	% Hardpan	
		% Wood	
		% Other	
Quality of Pool Metrics		Mean % Embeddedness	67%
Mean Pool Quality Index	NA	SD of % Embeddedness	37%
SD of Pool Quality Index	NA		
Total Number of Pools	0		
		Riparian Vegetation Metrics	
Canopy Cover Measurements		% Canopy Vegetation Cover	1
% Canopy Cover	89%	% Mid Layer Vegetation Cover	3.5

Stream 71-70a
Stream Habitat Survey Summary Sheet

Large Woody Debris Metrics		In-Stream Habitat Type Metrics	
Channel Zone 1 - Number of LWD	0	Stream Discharge	0
Channel Zone 1 - % of total LWD		HUs Per KM	16.40419948
Channel Zone 2 - Number of LWD		Pools per KM	0
Channel Zone 2 - % of total LWD		Mean Residual Pool Depth	0
Channel Zone 3 - Number of LWD		SD of Residual Pool Depth	0
Channel Zone 3 - % of total LWD		Mean Channel Alteration	
Total number of LWD		Mean Left Bank Stability	
Number of Key LWD Pieces		Mean Right Bank Stability	
% Key LWD Pieces		Mean Bank Stability	
LWD Pieces per KM	0	Mean Left Bank Vegetative Protection	
		Mean Right Bank Vegetative Protection	
		Mean Vegetative Protection Overall	
Existing Stream Geomorphology Metrics		Mean Left Bank Riparian Zone Width	
Mean Wetted Width	0.2286	Mean Right Bank Riparian Zone Width	
Mean Bankfull Width	0.4572	Mean Riparian Zone Width	
Mean Bankfull Height	0.1143		
Mean Stream Depth	1.27		
Mean Reach Slope	2%	Substrate Composition Metrics	
Mean Left Bank Angle	70°	Dominant Substrate Class Size	SA
Mean Right Bank Angle	75°	% Bedrock (smooth)	
SD of Wetted Width	0	% Boulder (250 to 4000 MM)	
SD of Bankfull Width	0.215526147	% Cobble (64 to 255 MM)	10%
SD of Bankfull Height	0.017960512	% Coarse Gravel (16 to 64 MM)	
SD of Stream Depth	0	% Fine Gravel (2 to 16 MM)	
SD of Left Bank Angle	14°	% Sand (.06 to 2 MM)	90%
SD of Right Bank Angle	21°	% Silt/Sand/Muck	
Total Stream Length Surveyed	0.06096	% Hardpan	
		% Wood	
		% Other	
Quality of Pool Metrics		Mean % Embeddedness	91%
Mean Pool Quality Index	NA	SD of % Embeddedness	28%
SD of Pool Quality Index	NA		
Total Number of Pools	0	Riparian Vegetation Metrics	
		% Canopy Vegetation Cover	2
Canopy Cover Measurements		% Mid Layer Vegetation Cover	1.5
% Canopy Cover	100%		

Stream 76-75
Stream Habitat Survey Summary Sheet

Large Woody Debris Metrics		In-Stream Habitat Type Metrics	
Channel Zone 1 - Number of LWD	0	Stream Discharge	0
Channel Zone 1 - % of total LWD	NA	HUs Per KM	13.12335958
Channel Zone 2 - Number of LWD	0	Pools per KM	0
Channel Zone 2 - % of total LWD	NA	Mean Residual Pool Depth	0
Channel Zone 3 - Number of LWD	0	SD of Residual Pool Depth	0
Channel Zone 3 - % of total LWD	NA	Mean Channel Alteration	
Total number of LWD	0	Mean Left Bank Stability	
Number of Key LWD Pieces		Mean Right Bank Stability	
% Key LWD Pieces		Mean Bank Stability	
LWD Pieces per KM	0	Mean Left Bank Vegetative Protection	
		Mean Right Bank Vegetative Protection	
		Mean Vegetative Protection Overall	
Existing Stream Geomorphology Metrics		Mean Left Bank Riparian Zone Width	
Mean Wetted Width	2.4384	Mean Right Bank Riparian Zone Width	
Mean Bankfull Width	2.286	Mean Riparian Zone Width	
Mean Bankfull Height	0.1778		
Mean Stream Depth	0		
Mean Reach Slope	7%	Substrate Composition Metrics	
Mean Left Bank Angle	60°	Dominant Substrate Class Size	BL
Mean Right Bank Angle	60°	% Bedrock (smooth)	
SD of Wetted Width	NA	% Boulder (250 to 4000 MM)	87%
SD of Bankfull Width	1.077630735	% Cobble (64 to 255 MM)	13%
SD of Bankfull Height	0.043994091	% Coarse Gravel (16 to 64 MM)	
SD of Stream Depth	0	% Fine Gravel (2 to 16 MM)	
SD of Left Bank Angle	NA	% Sand (.06 to 2 MM)	
SD of Right Bank Angle	NA	% Silt/Sand/Muck	
Total Stream Length Surveyed	0.0762	% Hardpan	
		% Wood	
		% Other	
Quality of Pool Metrics		Mean % Embeddedness	22%
Mean Pool Quality Index	NA	SD of % Embeddedness	4%
SD of Pool Quality Index	NA		
Total Number of Pools	0		
		Riparian Vegetation Metrics	
Canopy Cover Measurements		% Canopy Vegetation Cover	2
% Canopy Cover	99%	% Mid Layer Vegetation Cover	2.6

Perry Creek - West of I-405
Stream Habitat Survey Summary Sheet

Large Woody Debris Metrics		In-Stream Habitat Type Metrics	
Channel Zone 1 - Number of LWD		Stream Discharge	0
Channel Zone 1 - % of total LWD		HUs Per KM	51.66677
Channel Zone 2 - Number of LWD		Pools per KM	0
Channel Zone 2 - % of total LWD		Mean Residual Pool Depth	0
Channel Zone 3 - Number of LWD		SD of Residual Pool Depth	0
Channel Zone 3 - % of total LWD		Mean Channel Alteration	
Total number of LWD		Mean Left Bank Stability	
Number of Key LWD Pieces		Mean Right Bank Stability	
% Key LWD Pieces		Mean Bank Stability	
LWD Pieces per KM		Mean Left Bank Vegetative Protection	
		Mean Right Bank Vegetative Protection	
		Mean Vegetative Protection Overall	
Existing Stream Geomorphology Metrics		Mean Left Bank Riparian Zone Width	
Mean Wetted Width	3.776133333	Mean Right Bank Riparian Zone Width	
Mean Bankfull Width	2.878666667	Mean Riparian Zone Width	
Mean Bankfull Height	0.220133333		
Mean Stream Depth	0		
Mean Reach Slope	2%	Substrate Composition Metrics	
Mean Left Bank Angle	83°	Dominant Substrate Class Size	SA
Mean Right Bank Angle	72°	% Bedrock (smooth)	
SD of Wetted Width	5.442084605	% Boulder (250 to 4000 MM)	20%
SD of Bankfull Width	1.253981648	% Cobble (64 to 255 MM)	7%
SD of Bankfull Height	0.014664697	% Coarse Gravel (16 to 64 MM)	7%
SD of Stream Depth	0	% Fine Gravel (2 to 16 MM)	20%
SD of Left Bank Angle	06°	% Sand (.06 to 2 MM)	47%
SD of Right Bank Angle	18°	% Silt/Sand/Muck	
Total Stream Length Surveyed	0.0387096	% Hardpan	
		% Wood	
		% Other	
Quality of Pool Metrics		Mean % Embeddedness	68%
Mean Pool Quality Index	NA	SD of % Embeddedness	35%
SD of Pool Quality Index	NA		
Total Number of Pools	0	Riparian Vegetation Metrics	
		% Canopy Vegetation Cover	1.2
Canopy Cover Measurements		% Mid Layer Vegetation Cover	1.2
% Canopy Cover	99%		

Perry Creek - East of I-405
Stream Habitat Survey Summary Sheet

Large Woody Debris Metrics		In-Stream Habitat Type Metrics	
Channel Zone 1 - Number of LWD		Stream Discharge	0
Channel Zone 1 - % of total LWD		HUs Per KM	21.87226597
Channel Zone 2 - Number of LWD		Pools per KM	0
Channel Zone 2 - % of total LWD		Mean Residual Pool Depth	0
Channel Zone 3 - Number of LWD		SD of Residual Pool Depth	0
Channel Zone 3 - % of total LWD		Mean Channel Alteration	
Total number of LWD		Mean Left Bank Stability	
Number of Key LWD Pieces		Mean Right Bank Stability	
% Key LWD Pieces		Mean Bank Stability	
LWD Pieces per KM		Mean Left Bank Vegetative Protection	
		Mean Right Bank Vegetative Protection	
		Mean Vegetative Protection Overall	
Existing Stream Geomorphology Metrics		Mean Left Bank Riparian Zone Width	
Mean Wetted Width	1.591733333	Mean Right Bank Riparian Zone Width	
Mean Bankfull Width	1.710266667	Mean Riparian Zone Width	
Mean Bankfull Height	0.156633333		
Mean Stream Depth	13.54666667		
Mean Reach Slope	1%	Substrate Composition Metrics	
Mean Left Bank Angle	75°	Dominant Substrate Class Size	SA
Mean Right Bank Angle	57°	% Bedrock (smooth)	
SD of Wetted Width	0.345788452	% Boulder (250 to 4000 MM)	
SD of Bankfull Width	0.345788452	% Cobble (64 to 255 MM)	
SD of Bankfull Height	0.109495312	% Coarse Gravel (16 to 64 MM)	
SD of Stream Depth	12.52952247	% Fine Gravel (2 to 16 MM)	
SD of Left Bank Angle	26°	% Sand (.06 to 2 MM)	100%
SD of Right Bank Angle	31°	% Silt/Sand/Muck	
Total Stream Length Surveyed	0.04572	% Hardpan	
		% Wood	
		% Other	
Quality of Pool Metrics		Mean % Embeddedness	100%
Mean Pool Quality Index	NA	SD of % Embeddedness	0%
SD of Pool Quality Index	NA		
Total Number of Pools	0		
		Riparian Vegetation Metrics	
Canopy Cover Measurements		% Canopy Vegetation Cover	1.333333333
% Canopy Cover	53%	% Mid Layer Vegetation Cover	3.5

North Fork Perry Creek - West of I-405
Stream Habitat Survey Summary Sheet

Large Woody Debris Metrics		In-Stream Habitat Type Metrics	
Channel Zone 1 - Number of LWD	17	Stream Discharge	0
Channel Zone 1 - % of total LWD	100%	HUs Per KM	76.94277427
Channel Zone 2 - Number of LWD	0	Pools per KM	0
Channel Zone 2 - % of total LWD	0%	Mean Residual Pool Depth	0
Channel Zone 3 - Number of LWD	0	SD of Residual Pool Depth	0
Channel Zone 3 - % of total LWD	0%	Mean Channel Alteration	
Total number of LWD	17	Mean Left Bank Stability	
Number of Key LWD Pieces		Mean Right Bank Stability	
% Key LWD Pieces		Mean Bank Stability	
LWD Pieces per KM	261.6054325	Mean Left Bank Vegetative Protection	
		Mean Right Bank Vegetative Protection	
Existing Stream Geomorphology Metrics		Mean Vegetative Protection Overall	
Mean Wetted Width	2.571931429	Mean Left Bank Riparian Zone Width	
Mean Bankfull Width	2.643777143	Mean Right Bank Riparian Zone Width	
Mean Bankfull Height	0.190137143	Mean Riparian Zone Width	
Mean Stream Depth	9.797142857		
Mean Reach Slope	2%	Substrate Composition Metrics	
Mean Left Bank Angle	46°	Dominant Substrate Class Size	SA
Mean Right Bank Angle	30°	% Bedrock (smooth)	
SD of Wetted Width	0.873694599	% Boulder (250 to 4000 MM)	3%
SD of Bankfull Width	1.114801948	% Cobble (64 to 255 MM)	9%
SD of Bankfull Height	0.140898882	% Coarse Gravel (16 to 64 MM)	3%
SD of Stream Depth	5.11765804	% Fine Gravel (2 to 16 MM)	18%
SD of Left Bank Angle	22°	% Sand (.06 to 2 MM)	68%
SD of Right Bank Angle	06°	% Silt/Sand/Muck	
Total Stream Length Surveyed	0.06498336	% Hardpan	
		% Wood	
Quality of Pool Metrics		% Other	
Mean Pool Quality Index	NA	Mean % Embeddedness	78%
SD of Pool Quality Index	NA	SD of % Embeddedness	36%
Total Number of Pools	0		
		Riparian Vegetation Metrics	
Canopy Cover Measurements		% Canopy Vegetation Cover	2
% Canopy Cover	91%	% Mid Layer Vegetation Cover	3.571428571

North Fork Perry Creek - East of I-405
Stream Habitat Survey Summary Sheet

Large Woody Debris Metrics		In-Stream Habitat Type Metrics	
Channel Zone 1 - Number of LWD		Stream Discharge	0
Channel Zone 1 - % of total LWD		HUs Per KM	15.69216738
Channel Zone 2 - Number of LWD		Pools per KM	0
Channel Zone 2 - % of total LWD		Mean Residual Pool Depth	0
Channel Zone 3 - Number of LWD		SD of Residual Pool Depth	0
Channel Zone 3 - % of total LWD		Mean Channel Alteration	
Total number of LWD		Mean Left Bank Stability	
Number of Key LWD Pieces		Mean Right Bank Stability	
% Key LWD Pieces		Mean Bank Stability	
LWD Pieces per KM		Mean Left Bank Vegetative Protection	
		Mean Right Bank Vegetative Protection	
		Mean Vegetative Protection Overall	
Existing Stream Geomorphology Metrics		Mean Left Bank Riparian Zone Width	
Mean Wetted Width	2.124363636	Mean Right Bank Riparian Zone Width	
Mean Bankfull Width	3.043381818	Mean Riparian Zone Width	
Mean Bankfull Height	0.232063636		
Mean Stream Depth	13.27727273		
Mean Reach Slope	1%	Substrate Composition Metrics	
Mean Left Bank Angle	47°	Dominant Substrate Class Size	SA
Mean Right Bank Angle	49°	% Bedrock (smooth)	
SD of Wetted Width	0.838836508	% Boulder (250 to 4000 MM)	
SD of Bankfull Width	0.896070687	% Cobble (64 to 255 MM)	13%
SD of Bankfull Height	0.063013225	% Coarse Gravel (16 to 64 MM)	9%
SD of Stream Depth	7.214754453	% Fine Gravel (2 to 16 MM)	9%
SD of Left Bank Angle	23°	% Sand (.06 to 2 MM)	69%
SD of Right Bank Angle	19°	% Silt/Sand/Muck	
Total Stream Length Surveyed	0.25490424	% Hardpan	
		% Wood	
		% Other	
Quality of Pool Metrics		Mean % Embeddedness	81%
Mean Pool Quality Index	NA	SD of % Embeddedness	31%
SD of Pool Quality Index	NA		
Total Number of Pools	0		
		Riparian Vegetation Metrics	
Canopy Cover Measurements		% Canopy Vegetation Cover	1.181818182
% Canopy Cover	87%	% Mid Layer Vegetation Cover	3.227272727

APPENDIX E SPECIES LISTS

I-405, BELLEVUE TO LYNNWOOD IMPROVEMENT PROJECT
ECOSYSTEMS DISCIPLINE REPORT

**LISTED AND PROPOSED ENDANGERED AND THREATENED SPECIES AND CRITICAL
HABITAT; CANDIDATE SPECIES; AND SPECIES OF CONCERN
IN KING COUNTY
AS PREPARED BY
THE U.S. FISH AND WILDLIFE SERVICE
WASHINGTON FISH AND WILDLIFE OFFICE**

(Revised August 26, 2010)

LISTED

Bull trout (*Salvelinus confluentus*) – Coastal-Puget Sound DPS

Canada lynx (*Lynx canadensis*)

Gray wolf (*Canis lupus*)

Grizzly bear (*Ursus arctos* = *U. a. horribilis*)

Marbled murrelet (*Brachyramphus marmoratus*)

Northern spotted owl (*Strix occidentalis caurina*)

Major concerns that should be addressed in your Biological Assessment of project impacts to listed animal species include:

1. Level of use of the project area by listed species.
2. Effect of the project on listed species' primary food stocks, prey species, and foraging areas in all areas influenced by the project.
3. Impacts from project activities and implementation (e.g., increased noise levels, increased human activity and/or access, loss or degradation of habitat) that may result in disturbance to listed species and/or their avoidance of the project area.

Castilleja levisecta (golden paintbrush) [historic]

Major concerns that should be addressed in your Biological Assessment of project impacts to listed plant species include:

1. Distribution of taxon in project vicinity.
2. Disturbance (trampling, uprooting, collecting, etc.) of individual plants and loss of habitat.
1. Changes in hydrology where taxon is found.

DESIGNATED

Critical habitat for bull trout

Critical habitat for the marbled murrelet

Critical habitat for the northern spotted owl

PROPOSED

Revised critical habitat for bull trout

CANDIDATE

Fisher (*Martes pennanti*) – West Coast DPS
Oregon spotted frog (*Rana pretiosa*) [historic]
Yellow-billed cuckoo (*Coccyzus americanus*)

SPECIES OF CONCERN

Bald eagle (*Haliaeetus leucocephalus*)
Beller's ground beetle (*Agonum belleri*)
California wolverine (*Gulo gulo luteus*)
Cascades frog (*Rana cascadae*)
Hatch's click beetle (*Eanus hatchi*)
Larch Mountain salamander (*Plethodon larselli*)
Long-eared myotis (*Myotis evotis*)
Long-legged myotis (*Myotis volans*)
Northern goshawk (*Accipiter gentilis*)
Northern sea otter (*Enhydra lutris kenyoni*)
Northwestern pond turtle (*Emys* (= *Clemmys*) *marmorata marmorata*)
Olive-sided flycatcher (*Contopus cooperi*)
Pacific lamprey (*Lampetra tridentata*)
Pacific Townsend's big-eared bat (*Corynorhinus townsendii townsendii*)
Peregrine falcon (*Falco peregrinus*)
River lamprey (*Lampetra ayresi*)
Tailed frog (*Ascaphus truei*)
Valley silverspot (*Speyeria zerene bremeri*)
Western toad (*Bufo boreas*)
Aster curtus (white-top aster)
Botrychium pedunculatum (stalked moonwort)
Cimicifuga elata (tall bugbane)

**LISTED AND PROPOSED ENDANGERED AND THREATENED SPECIES AND
CRITICAL HABITAT; CANDIDATE SPECIES; AND SPECIES OF CONCERN
IN SNOHOMISH COUNTY**

**AS PREPARED BY
THE U.S. FISH AND WILDLIFE SERVICE
WASHINGTON FISH AND WILDLIFE OFFICE**

(Revised August 26, 2010)

LISTED

Bull trout (*Salvelinus confluentus*) – Coastal-Puget Sound DPS
Canada lynx (*Lynx canadensis*)
Gray wolf (*Canis lupus*)
Grizzly bear (*Ursus arctos* = *U. a. horribilis*)
Marbled murrelet (*Brachyramphus marmoratus*)
Northern spotted owl (*Strix occidentalis caurina*)

Major concerns that should be addressed in your Biological Assessment of project impacts to listed species include:

1. Level of use of the project area by listed species.
2. Effect of the project on listed species' primary food stocks, prey species, and foraging areas in all areas influenced by the project.
3. Impacts from project activities and implementation (e.g., increased noise levels, increased human activity and/or access, loss or degradation of habitat) that may result in disturbance to listed species and/or their avoidance of the project area.

DESIGNATED

Critical habitat for bull trout
Critical habitat for the marbled murrelet
Critical habitat for the northern spotted owl

PROPOSED

Revised critical habitat for bull trout

CANDIDATE

Fisher (*Martes pennanti*) – West Coast DPS
Oregon spotted frog (*Rana pretiosa*) [historic]
Yellow-billed cuckoo (*Coccyzus americanus*)

SPECIES OF CONCERN

Bald eagle (*Haliaeetus leucocephalus*)
Beller's ground beetle (*Agonum belleri*)
California wolverine (*Gulo gulo luteus*)
Cascades frog (*Rana cascadae*)
Long-eared myotis (*Myotis evotis*)
Long-legged myotis (*Myotis volans*)
Northern goshawk (*Accipiter gentilis*)
Olive-sided flycatcher (*Contopus cooperi*)
Pacific lamprey (*Lampetra tridentata*)
Pacific Townsend's big-eared bat (*Corynorhinus townsendii townsendii*)
Peregrine falcon (*Falco peregrinus*)
River lamprey (*Lampetra ayresi*)
Tailed frog (*Ascaphus truei*)
Western toad (*Bufo boreas*)
Botrychium pedunculatum (stalked moonwort)

APPENDIX F WETLAND FUNCTIONAL VALUES

Functional values tables discussed in Section 4 are provided in Exhibit F-1.

Exhibit F-1: Summary of Wetland Ratings in the Study Area

Wetland	Maximum Possible Score			
	Total Water Quality Functions 32	Total Hydrologic Functions 32	Total Habitat Functions 36	Total Functions 100
16.2R	30	16	25	71
19.7R	16	6	15	37
19.8L	4	4	11	19
19.9L	8	2	10	20
20.0L	12	4	8	24
20.34L	26	10	10	46
20.35L	4	2	8	14
20.4L	28	16	17	61
21.4M	6	6	13	25
21.5M	6	10	13	29
21.5R	14	6	17	37
22.5L	6	6	13	25
22.8L	10	16	13	39
22.8R	4	2	8	14
23.4R	2	6	18	26
23.5R	4	6	18	28
25.2L	6	0	11	17
25.22L	4	0	8	12
25.3R	2	2	11	15
25.3L	10	22	13	45
25.4R	6	6	12	24

Source: Ecology 2004a and 2006

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APPENDIX G CHARACTERISTICS OF WSDOT-OWNED CULVERTS

Information on WSDOT-owned culverts discussed in Section 4 is shown on the following pages.

Exhibit G-1: Characteristics of WSDOT-owned Culverts

Stream Conveyed	Culvert ID	Culvert Description	Upstream Habitat Description	Basin	Culvert Type	Milepost	Linear Feet of Upstream Habitat	Fish Bearing	Fish Passable
Yarrow Creek	Braids 15	This culvert conveys Yarrow Creek from east to west.	Stream habitat condition above the I-405 crossing of Yarrow Creek is moderate and supports only resident salmonids. It is a small channel suitable for spawning and rearing.	Yarrow Creek	30" cmp	15.9	7,920	Yes	No
Forbes Creek	20a	This is a new, flat culvert that conveys Forbes Creek from east to west. The west side of this culvert has step pools that make the area passable by fish.	Stream habitat above this culvert is a low gradient year-round channel that is suitable for cutthroat trout. The stream above this culvert exceeds the state of Washington TMDL standards for temperature.	Forbes Creek	78" cmp	19.14	10,560	Yes	Yes
Forbes Creek	20	This is the original I-405 Forbes Creek culvert and is now an overflow culvert during high flows.	Stream habitat above this culvert is a low gradient year-round channel that is suitable for cutthroat trout. The stream above this culvert exceeds the state of Washington TMDL standards for temperature.	Forbes Creek	42" cmp	19.14	10,560	Yes	No
Juanita Creek at NE 132nd Street	25	This 700-foot long culvert conveys Juanita Creek at NE 132nd Street across I-405, Totem Lake Blvd, and NE 132nd Street.	Juanita Creek at NE 132nd Street flows through areas of multi-family housing, with very little native vegetation. The channels are downcut and/or eroded in most locations, showing signs of volatile and highly urbanized flows. The upstream habitat is in poor condition, with a low biological index and high temperatures.	Juanita Creek	48" conc	20.9	10,560	Yes	No

Stream Conveyed	Culvert ID	Culvert Description	Upstream Habitat Description	Basin	Culvert Type	Milepost	Linear Feet of Upstream Habitat	Fish Bearing	Fish Passable
Juanita Creek at NE 145th Street	32	This culvert conveys the main stem of Juanita Creek from east to west underneath I-405. 150 feet to the east of this culvert, east of NB lane of I-405, is a flood control structure owned by King County. Juanita Creek passes through this structure before it reaches this culvert.	The habitat above I-405 is suitable for rearing and migration only. This habitat is marginal due to the ravine-like nature of the channel and is not ideal for spawning because sediment load in this system is too high.	Juanita Creek	48" cmp	21.9	1,500	Yes	No
Sammamish River	Samm. 1	A new stormwater detention pond will outfall to the Sammamish River via this culvert. It will be designed to prevent fish from entering the stormwater system. I-405 is bridged over the Sammamish River.	Channelized habitat for 3-4 miles upstream. No natural riparian areas, backwater, off channel or side channel areas, and no recharge system because the Sammamish River has been dredged, filled, and reconstructed.	Sammamish River	Bridge	23.6	84,480	Yes	No – Stormwater outfall Yes – I-405 Bridge over Sammamish River
North Fork Perry Creek	81	This culvert conveys North Fork Perry Creek from east to west. This culvert is in excellent condition and conveys the stream without any hindrance.	There is moderate to good rearing habitat for salmonids upstream of this culvert.	North Creek	60"rcp	26.45	5,280	Yes	Yes

Notes:

TMDL – Total Maximum Daily Load

cmp – corrugated metal pipe

conc – concrete

rcp – reinforced concrete pipe

unk - unknown

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APPENDIX H LARGE WOODY DEBRIS RECRUITMENT STUDY

Introduction

Prior to construction of the I-405, Bellevue to Lynnwood Improvement Project, the Washington State Department of Transportation (WSDOT) conducted tree surveys to quantitatively and qualitatively document existing tree abundance and composition in areas of proposed clearing. Information collected during these surveys will be used to support the analysis of project effects on Large Woody Debris (LWD) recruitment to streams in and downstream of the project area. The methodology used for the surveys was developed in part to be consistent with the September 1998 Northwest Indian Fisheries document entitled *TFW Effectiveness Monitoring and Evaluation Program-Riparian Stand Survey, Final Draft*, and in a manner that can be repeated for other surveys that may be necessary in the future. Results of the tree surveys are based on field work conducted by consultants on behalf of WSDOT on September 5, 6, 12, 13, 25, and 26, 2007. Topics discussed in this report include the following:

- Definition of tree survey areas
- Data collection methods
- Description of project-specific tree surveys
- Results

Tree Survey Areas

Tree surveys were conducted in areas (Tree Survey Areas) where the proposed clearing and grading line and the 100-foot and 200-foot offset lines overlap, as shown in Figure 1. Please refer to the I-405, Bellevue to Lynnwood Improvement Project Joint Aquatic Resource Permit Application (JARPA) drawings for detailed locations of the clearing and grading lines. The tree survey areas were defined by the following:

- Existing streams, 100-foot and 200-foot offset lines from the ordinary high water mark (OHWM) of each stream, and the proposed clearing and grading line.
- Tree survey areas did not extend across or onto roadways or parking lots.
- If the offset lines of two separate streams overlapped, the survey area for each stream was surveyed independently of the other stream's survey area.

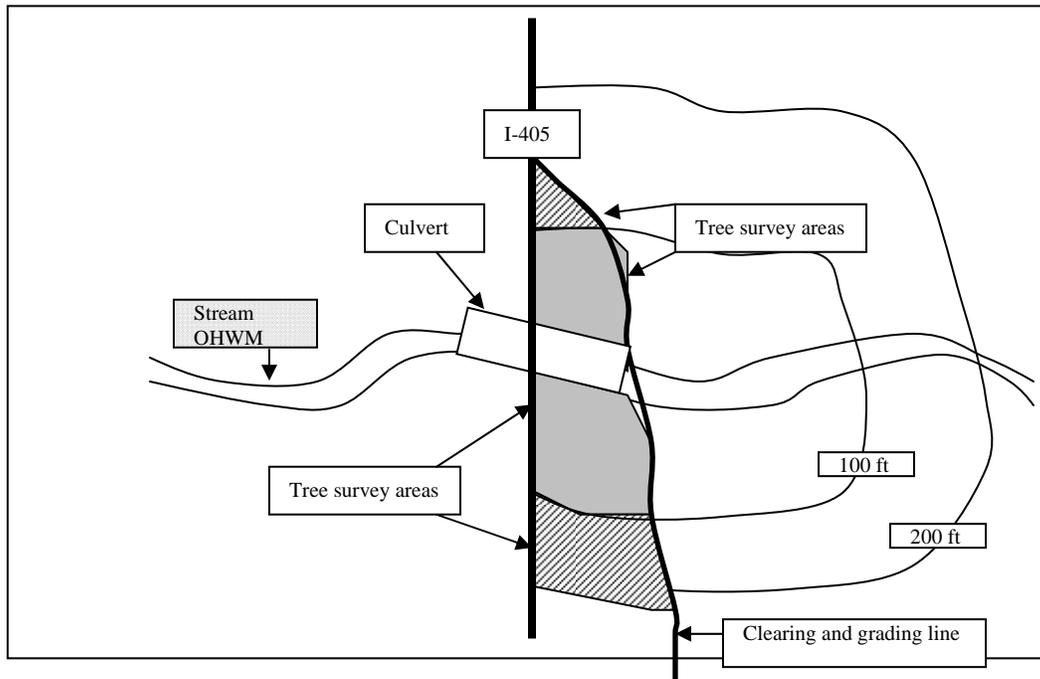


Figure 1
Schematic of Tree Survey Area

Data Collection

The following methods were adhered to at each tree survey area:

- The location of the tree survey area and associated stream were confirmed using mile post, GIS-generated field mapping, and visual observation of the stream.
- The approximate extent of the clearing and grading line within the 200-foot offset line was verified and flagged using a range finder, tape measure, measuring wheel, GPS, or GIS-generated field mapping.
- Vegetation (including snags) with a diameter at breast height (dbh) greater than 6 inches within the survey area was identified and recorded as follows:
 - A qualified biologist measured dbh, identified the species, marked the tree with chalk at breast height, and relayed the information to the data collector. The data collector recorded all of the information on the data sheets.
 - Each tree or snag was recorded into one of the following dbh size classes: 6 to 12 inches, 12 to 18 inches, 18 to 24 inches, 24 to 30 inches, 30 to 36 inches, and greater than 36 inches (actual dbh of trees greater than 36 inches was recorded).

- Trees with more than one stem below dbh, and with dbh greater than 6 inches, were recorded as individual stems.
- Downed woody debris with dbh greater than 6 inches was only recorded within the 100-foot offset line, and as individual pieces. Species was not identified and recorded.
- Recently cut tree stumps (dbh greater than 6 inches) were measured and recorded in the “Notes” section.
- Photographs were taken from the 200-foot offset line facing the tree survey area to document the conditions of the tree survey area.

If special circumstances arose in the field, these circumstances were documented in the “Notes” section of the data sheet and photographs were taken.

Project-specific Tree Surveys

Application of the protocol described in Section 1 of this report identified seven of the sixteen streams in the project area met the criteria for the tree surveys. Streams included in the surveys were C5, C28, C29, Juanita Creek at NE 145th St, KL14, Stream 42, and the Sammamish River. Please refer to *Section 4 - Baseline Conditions of the Ecosystems Discipline Report* for detailed stream descriptions.

Results

In total, 625 trees were identified in the survey areas. Of them, 381 are deciduous and 244 are evergreen. Eight species were identified, including bigleaf maple (*Acer macrophyllum*), red alder (*Alnus rubra*), Black cottonwood (*Populus balsamifera* spp. *trichocarpa*), Douglas fir (*Pseudotsuga menziesii*), Garry oak (*Quercus garryana*), Sitka willow (*Salix sitchensis*), western red cedar (*Thuja plicata*), and western hemlock (*Tsuga heterophylla*).

The abundance of each species, in descending order, is bigleaf maple (245), Douglas fir (162), red alder (116), western red cedar (49), western hemlock (33), black cottonwood (13), Garry oak (5), and Sitka willow (1). Over 51% of the trees are between 6 and 12 inches. Approximately 26% are greater than 12 inches, but less than 18 inches, 17% are between 18 and 36 inches, and 5% are greater than 36 inches.

The results of the individual tree surveys are discussed on the following pages.

C5

A total of 25 trees were identified in the survey area; 10 trees in the 100 foot offset and 15 trees in the 200 foot offset, as shown in Table 1. Species identified in the survey area include bigleaf maple (10), red alder (8), Douglas fir (4), and western red cedar (3).

Species composition is evenly distributed among the four tree species in the survey area.

Fifteen of the 25 trees (60 percent) are in the 6 to 12 inches dbh size class. The remaining 10 trees are evenly distributed among the other dbh size classes. In the 100 foot buffer, 50 percent of the trees are 6 to 12 inches dbh and 67 percent of the trees are 6 to 12 inches dbh in the 200 foot buffer. Two evergreen trees greater than 36 inches dbh were identified in the survey area.

Table 1. Trees in the C5 survey area

100 foot offset								
	Evergreen (E) Deciduous (D) Woody debris (W)	6-12" dbh	12-18" dbh	18-24" dbh	24-30" dbh	30-36" dbh	> 36" dbh	Total
Tree Species								
Bigleaf maple	D	3	2	1	1			7
Red alder	D	2						2
Douglas fir	E						1 (38")	1
	Total	5	2	1	1		1	10
200 foot offset								
	Evergreen (E) Deciduous (D) Woody debris (W)	6-12" dbh	12-18" dbh	18-24" dbh	24-30" dbh	30-36" dbh	> 36" dbh	Total
Tree Species								
Bigleaf maple	D	3						3
Red alder	D	6						6
Douglas fir	E		1	1		1		3
Western red cedar	E	1				1	1 (58")	3
	Total	10	1	1		2	1	15

C28

A total of 104 trees were recorded within the survey area; 67 trees in the 100 foot offset and 37 trees in the 200 foot offset. As shown in Table 2, three pieces of LWD were identified in the 100 foot offset. Bigleaf maple trees comprise more than half (57 percent) of the trees recorded in the survey area, with western red cedar the second most dominant species with 36 percent. A single Sitka willow was identified in the survey area.

The majority of trees are in the 6 – 12 inches dbh and 12 – 18 inches dbh size classes. Two bigleaf maple and seven western red cedar trees are greater than 36 inches dbh, for a total of nine trees in this size class.

Table 2. Trees in the C28 survey area

100 foot offset								
	Evergreen (E) Deciduous (D) Woody debris (W)	6-12" dbh	12-18" dbh	18-24" dbh	24-30" dbh	30-36" dbh	> 36" dbh	Total ¹
Tree Species								
Bigleaf maple	D	11	12	6	3	2	2 (42", 60")	36
Black cottonwood	D	3						3
Douglas fir	E		1					1
Sitka willow	D	1						1
Western red cedar	E	8	3	5	1	2	7 (38", 50", 50", 50", 52", 52", 54")	26
	W	1	1		1			3
	Total ¹	23	16	11	4	4	9	67
200 foot offset								
	Evergreen (E) Deciduous (D) Woody debris (W)	6-12" dbh	12-18" dbh	18-24" dbh	24-30" dbh	30-36" dbh	> 36" dbh	Total
Tree Species								
Bigleaf maple	D	13	6	4				23
Douglas fir	E	2	1					3
Western red cedar	E	4	4	3				11
	Total	19	11	7				37

¹ Woody debris is not included in the total.

C29

A total of 95 trees and snags were identified in the survey area; 51 trees and 4 snags in the 100 foot offset and 40 trees and 2 snags in the 200 offset. Only deciduous trees are present in the 100 and 200 foot offsets of C29. As shown in Table 3, bigleaf maple trees comprise the majority of the vegetation, with a total of 63 trees and one snag.

Sixty of the trees and snags are in the 6 – 12 inches dbh class, comprising 63 percent of the vegetation. The remaining 35 trees, or 37 percent, are in the 12 – 18 inches, 18 – 24 inches, and 30 – 36 inches dbh size classes.

Table 3. Trees in the C29 survey area

100 foot offset								
	Evergreen (E) Deciduous (D) Woody debris (W)	6-12" dbh	12-18" dbh	18-24" dbh	24-30" dbh	30-36" dbh	> 36" dbh	Total
Tree Species								
Bigleaf maple	D	17	9	4		2		32
Red alder	D	16	1	2				19
Red alder	Snag	4						4
	Total	37	10	6		2		55
200 foot offset								
	Evergreen (E) Deciduous (D) Woody debris (W)	6-12" dbh	12-18" dbh	18-24" dbh	24-30" dbh	30-36" dbh	> 36" dbh	Total
Tree Species								
Bigleaf maple	D	15	13	2				30
Bigleaf maple	Snag	1						1
Red alder	D	3						3
Red alder	Snag	1						1
Black cottonwood	D	3	2					5
	Total	23	15	2				40

Juanita Creek at NE 145th St

A total of 82 trees and snags were identified in the survey area; 37 trees and 3 snags in the 100 foot offset and 42 trees in the 200 foot offset, as shown in Table 4. Both deciduous and evergreen trees are present in the survey area, with Douglas fir trees comprising the majority of the vegetation, with 50 trees or 60 percent of the vegetation. A single Pacific willow was identified in the survey area.

Two black cottonwood and one Douglas fir trees greater than 36 inches dbh are present in the survey area, for a total of three trees in this dbh size class. Forty-four trees are in the 6 – 12 inches dbh class, approximately more than half (54 percent) of the vegetation recorded. The 12 – 18 inches dbh size class has the second highest tree count; with the remaining trees distributed among the other three size classes.

Table 4. Trees in the Juanita Creek at NE 145th St survey area

100 foot offset								
	Evergreen (E) Deciduous (D) Woody debris (W)	6-12" dbh	12-18" dbh	18-24" dbh	24-30" dbh	30-36" dbh	> 36" dbh	Total
Tree Species								
Bigleaf maple	D	3	2	1	1			7
Red alder	D	5	2					7
Red alder	Snag	1	1	1				3
Black cottonwood	D	1	1			1	1 (60")	4
Douglas fir	E	5	10	2	1			18
Western red cedar	E	1						1
	Total	16	16	4	2	1	1	40
200 foot offset								
	Evergreen (E) Deciduous (D) Woody debris (W)	6-12" dbh	12-18" dbh	18-24" dbh	24-30" dbh	30-36" dbh	> 36" dbh	Total
Tree Species								
Bigleaf maple	D	5		1	1			7
Red alder	D		1					1
Black cottonwood	D						1 (40")	1
Douglas fir	E	23	6	2			1 (40")	32
Pacific willow	D			1				1
	Total	28	7	4	1		2	42

KL14

A total of 70 trees (including one snag) were identified in the survey area; 23 trees in the 100 foot offset and 46 trees and 1 snag in the 200 foot offset, as shown in Table 5. Most of the vegetation consists of Douglas fir trees, which comprise 60 percent of the total vegetation. Four Garry oak trees were identified at KL14, one of two streams with oak trees in the stream buffer.

Only three of the six dbh size classes are represented at KL14; 6 – 12 inches, 12 – 18 inches, and 18 – 24 inches. The number of trees in the 6 – 12 inches and 12 – 18 inches dbh size classes is approximately the same (28 and 31, respectively), while there are only 11 trees in the 18 – 24 inches dbh size class.

Table 5. Trees in the KL14 survey area

100 foot offset								
	Evergreen (E) Deciduous (D) Woody debris (W)	6-12" dbh	12-18" dbh	18-24" dbh	24-30" dbh	30-36" dbh	> 36" dbh	Total
Tree Species								
Bigleaf maple	D	4	1	1				6
Red alder	D	2						2
Douglas fir	E	4	10	1				15
	Total	10	11	2				23
200 foot offset								
	Evergreen (E) Deciduous (D) Woody debris (W)	6-12" dbh	12-18" dbh	18-24" dbh	24-30" dbh	30-36" dbh	> 36" dbh	Total
Tree Species								
Bigleaf maple	D	4	1					5
Red alder	D	7	3					10
Red alder	Snag	1						1
Douglas fir	E	5	14	8				27
Garry oak	D	1	2	1				4
	Total	18	20	9				47

Stream 42

A total of 246 trees were recorded in the survey area; 102 trees and 5 snags in the 100 foot offset and 132 trees and 7 snags in the 200 offset, as shown in Table 6. Of the 246 trees, 143 trees are deciduous and 103 trees are evergreen. Stream 42 is the second stream to contain Garry oak in its buffer. Stream 42 represents more than 1/4 of the total number of trees and snags inventoried during the surveys.

More than half (54 percent) of the trees are between 6 and 12 inches dbh. Most of the remaining trees are in the 12 – 18 inches and 18 – 24 inches dbh size classes, with even fewer trees in the 24 – 30 inches and 30 – 36 inches dbh size class. Nineteen trees greater than 36 inches dbh are present in Stream 42's stream buffer, ranging between 38 and 78 inches dbh. Thirteen of the 19 pieces are deciduous species, while the other 6 pieces are evergreen species. Eight pieces of LWD were identified in the 100 foot offset.

Table 6. Trees in the Stream 42 survey area

100 foot offset								
	Evergreen (E) Deciduous (D) Woody debris (W)	6-12" dbh	12-18" dbh	18-24" dbh	24-30" dbh	30-36" dbh	> 36" dbh	Total ¹
Tree Species								
Bigleaf maple	D	16	7	1	1		9 (40", 40", 44", 44", 46", 50", 52", 68", 70")	34
Bigleaf maple	Snag						1 (44")	1
Red alder	D	29	1					30
Douglas fir	E	4	14					18
Western red cedar	E	3				1	1 (50")	5
Western hemlock	E	2	4	1	4	1	2 (38", 44")	14
Western hemlock	Snag	1	1	2				4
Garry oak	D	1						1
	W	1	5	2				8
	Total ¹	56	27	4	5	2	13	107
200 foot offset								
	Evergreen (E) Deciduous (D) Woody debris (W)	6-12" dbh	12-18" dbh	18-24" dbh	24-30" dbh	30-36" dbh	> 36" dbh	Total
Tree Species								
Bigleaf maple	D	30	3	6	1	1	3 (38", 40", 44")	44
Red alder	D	27	1					28
Red alder	Snag	5						5
Douglas fir	E	11	18	12	1		1 (48")	43
Douglas fir	Snag		1					1
Western red cedar	E				1		2 (64", 78")	3
Western hemlock	E	3	5	5	1			14
Western hemlock	Snag			1				1
	Total	76	28	24	4	1	6	139

¹ Woody debris is not included in the total.

Sammamish River

A total of 3 bigleaf maple trees were recorded in the survey area. All of the trees are in the 100 foot offset; no trees were identified in the 200 foot offset, as shown in Table 7.

Table 7. Trees in the Sammamish River survey area

100 foot offset								
	Evergreen (E) Deciduous (D) Woody debris (W)	6-12" dbh	12-18" dbh	18-24" dbh	24-30" dbh	30-36" dbh	> 36" dbh	Total
Tree Species								
Bigleaf maple	D	1	2					3
	Total	1	2					3