

**WAC 197-11-960 Environmental checklist.**

ENVIRONMENTAL CHECKLIST

*Purpose of checklist:*

The State Environmental Policy Act (SEPA), chapter 43.21C RCW, requires all governmental agencies to consider the environmental impacts of a proposal before making decisions. An environmental impact statement (EIS) must be prepared for all proposals with probable significant adverse impacts on the quality of the environment. The purpose of this checklist is to provide information to help you and the agency identify impacts from your proposal (and to reduce or avoid impacts from the proposal, if it can be done) and to help the agency decide whether an EIS is required.

*Instructions for applicants:*

This environmental checklist asks you to describe some basic information about your proposal. Governmental agencies use this checklist to determine whether the environmental impacts of your proposal are significant, requiring preparation of an EIS. Answer the questions briefly, with the most precise information known, or give the best description you can.

You must answer each question accurately and carefully, to the best of your knowledge. In most cases, you should be able to answer the questions from your own observations or project plans without the need to hire experts. If you really do not know the answer, or if a question does not apply to your proposal, write "do not know" or "does not apply." Complete answers to the questions now may avoid unnecessary delays later.

Some questions ask about governmental regulations, such as zoning, shoreline, and landmark designations. Answer these questions if you can. If you have problems, the governmental agencies can assist you.

The checklist questions apply to all parts of your proposal, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. The agency to which you submit this checklist may ask you to explain your answers or provide additional information reasonably related to determining if there may be significant adverse impact.

*Use of checklist for nonproject proposals:*

Complete this checklist for nonproject proposals, even though questions may be answered "does not apply." IN ADDITION, complete the SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS (part D).

For nonproject actions, the references in the checklist to the words "project," "applicant," and "property or site" should be read as "proposal," "proposer," and "affected geographic area," respectively.

A. BACKGROUND

1. Name of proposed project, if applicable:

**Verdant**

2. Name of applicant:

**Mark Putzke**

**Chandler Homes LLC**

3. Address and phone number of applicant and contact person:

**332 10th Ave**

**Kirkland, WA 98033**

**425 466 7299**

4. Date checklist prepared:

**2/23/16**

5. Agency requesting checklist:

**City of Kirkland**

6. Proposed timing or schedule (including phasing, if applicable):

**Phasing starting spring 2016 thru spring 2018**

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.

**No**

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.

- **Wetland and Stream Delineation Report by The Watershed Company, September 2014 (Attachment A).**
- **Stream and Buffer Modification/Restoration and Arch Culvert Plan by Re-Align Environmental, 2015(Attachment B).**
- **Arborist Report, Brian Giles, February 2015 (Attachment C).**
- **Geotechnical Investigation Report, January 28, 2015 (Attachment D).**
- **Stormwater Technical Information Report for Targeted and Large/Full Project Site (Attachment E).**

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain.

**There are no known other projects on or affecting this site, therefore there are no known applications pending for approvals associated with other projects on the subject property.**

10. List any government approvals or permits that will be needed for your proposal, if known.

- **US Army Corps of Engineers Section 404 Permit (NWP # 27 for Aquatic Restoration)**
- **Wa. Dept. of Ecology Section 401 Certification for NWP #27 (for Aquatic Restoration)**
- **Wa Dept. of Fish and Wildlife Hydraulic Project Approval (for Aquatic Restoration)**
- **City of Kirkland Stream Buffer Reduction Authorization**

**The applicant will provide a copy of the JARPA to the City once it is completed.**

11. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.)

**Construct 10 duplex style townhomes with associated infrastructure including Access Driveway with arched culvert over existing Class B, non-fish bearing perennial stream ( Champagne Creek). The proposed development would add 8,400 s.f. of new impervious surface to the subject property. New and improved impervious surface would total 15,300 s.f. Stream and wetlands have been delineated, rated and typed by The Watershed Company (see Attachment A).**

**KZC 90.100(1)(b) states that:**

**“Buffers may be decreased through buffer enhancement. The applicant shall demonstrate that through enhancing the buffer (by removing invasive plants, planting native vegetation, installing habitat features such as downed logs or snags, or other means) the reduced buffer will function at a higher level than the standard existing buffer. A buffer enhancement plan**

shall at a minimum provide the following: (1) a map locating the specific area of enhancement; (2) a planting plan that uses native species, including groundcover, shrubs, and trees; and (3) a monitoring and maintenance program prepared by a qualified professional consistent with the standards specified in KZC 90.55(4). Buffers may not be reduced at any point by more than one-third (1/3) of the standards in KZC 90.90(1).”

Chandler Homes, LLC proposes to reduce the buffer consistent with KZC 90.100(1)(b). Under this proposal, Chandler Homes would reduce the existing 60-foot stream buffer by one third, or 20 feet, for a modified stream buffer width of 40 feet (See Attachment B). Attachment B documents the proposed buffer enhancement plan.

The proposed arch culvert will be installed under a new access road onto the property. The arch culvert has been sized to pass the 100-year storm, as modeled by Civil Engineering Solutions at 67 cubic feet per second. The culvert would span the stream, with a bottom width of 20 feet wide (channel width is approximately 6 feet). The culvert would cover a total stream length of 25.9 feet, occupying a total space of 518 square feet. Attachment B documents the sensitive area and buffer square footage under the existing and proposed conditions.

The proposed arch culvert will displace 1,635 s.f. of existing stream buffer (after 20’ buffer reduction). Chandler Homes LLC proposes to remove an existing culvert in the stream to compensate for the loss of this buffer. The 12” culvert is approximately 40 ft. long , with an inlet invert elevation of 288.8 ft. and an outlet invert of 285.2 ft., for a total drop of 3.6 ft. The resulting slope gradient is 9%. Chandler Homes proposes to retain the inlet and outlet elevations and the slope in between for the design of the restored channel.

12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.

**The subject parcel is located at 7845 NE 122nd Place (S25 T 26N R04E) in the Finn Hill neighborhood, which is in the Champagne Creek Drainage Basin.**

## B. ENVIRONMENTAL ELEMENTS

### 1. Earth

- a. General description of the site (circle one): Flat, rolling, hilly, steep slopes, mountainous, other . . . . .

**The property is developed and contains a single family residence, detached garage/storage area, shed, gravel driveway and parking area, vegetated riparian corridor, and lawn areas. The Terrain is rolling and the slope gradients in the developed area are approximately 8 to 10%.**

- b. What is the steepest slope on the site (approximate percent slope)?  
**~20% (existing driveway cut, slopes along NE 122nd Place).**
- c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any prime farmland.  
**See Attachment D (Geotechnical Report).**
- d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.

**No - See Attachment D (Geotechnical Report).**

- e. Describe the purpose, type, and approximate quantities of any filling or grading proposed. Indicate source of fill.

**Fill Required to install new driveway across the Champagne Creek as preferred by City of Kirkland Staff during pre-application process. An open culvert with no disturbance to stream flow is proposed as part of project. Estimated fill required for the arch culvert crossing totals 330 cu. yd. Fill material will be clean soil and gravel, as required for the installation of the retaining walls, sewer line, stormwater outfall line, and driveway surface.**

**Outside of the new driveway stream crossing, the ground disturbance for the construction of the apartment buildings and associated infrastructure is estimated at approximately 200 cu.yd. of export and approximately 200 cu. yd. import (e.g., gravel).**

- f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.

**Yes. The project would include clearing and grading of native soils. The development area drains toward Champagne Creek. Standard erosion control measures, including the installation of silt fence and/or wattles along the disturbance area, will be employed in accordance with DOE and City standards.**

- g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

**Approximately 39% of the subject property will be covered in impervious surface, based on the gross site area (including critical area and buffer).**

- h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:

**An Erosion and Sediment Control plan will be submitted with grading and building permit applications. Standard erosion control measures, including the installation of silt fence and/or wattles along the disturbance area, will be employed in accordance with DOE and City standards.**

**a. Air**

- a. What types of emissions to the air would result from the proposal (i.e., dust, automobile, odors, industrial wood smoke) during construction and when the project is completed? If any, generally describe and give approximate quantities if known.

**General construction dust due to construction of structures and infrastructure, diesel gas emissions from construction equipment. Quantities are unknown.**

- b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.

**None anticipated.**

- c. Proposed measures to reduce or control emissions or other impacts to air, if any:

**As part of the Erosion and Sediment Control Plan, if fugitive dust is noted as an issue during monitoring, watering of access corridors may be used to reduce dust.**

**3. Water**

- a. Surface:

- 1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.

**Yes. A Champagne Creek as discussed in Attachments A and B.**

- 2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.

**Yes, The Driveway and site construction all fall within 200 feet of subject stream. An arched culvert proposed over seasonal stream as per attached site plan (see also Attachment B).**

- 3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.

**The proposed arch culvert would rest on two concrete footings that would occupy ~ 1 cu yd within the buffer. The driveway would occupy 1,635 s.f. of existing buffer. No fill material would be placed within the stream for the construction of the arch culvert. To compensate for the loss of buffer area, Chandler Homes LLC proposes to remove an existing culvert from Champagne Creek (Attachment B).**

- 4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known.

**No withdrawals of water are proposed for the construction of the project. The installation of the arch culvert is designed to take place entirely outside of the Ordinary High Water Mark (OHWM) of Champagne Creek (the stream is approximately 72 inches (6 feet) wide and the design width of the culvert is 20 feet. No diversion of the stream is planned for construction of the arch culvert.**

**The removal of the existing 12" culvert from Champagne Creek will require the temporary diversion of the stream around the culvert site for the duration of the culvert removal project (estimated 1 – 2 weeks total).**

**All work near and in the stream will take place during the summer, when streamflow is at its lowest.**

- 5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.

**All construction activity is proposed to occur outside 100-year floodplain except for the removal of existing 12" culvert from the stream and the restoration of the stream channel.**

- 6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.

**None anticipated.**

b. Ground:

- 1) Will ground water be withdrawn, or will water be discharged to ground water? Give general description, purpose, and approximate quantities if known.

**Groundwater extraction/injection is not proposed.**

- 2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals. . . ; agricultural; etc.). Describe the general size of the system, the

number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.

**None.**

c. Water runoff (including stormwater):

- 1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.

**Early stormwater engineering analysis indicates project requires a Level 2 Storm Detention Vault which will mitigate peak flow rates and duration of runoff to Champagne Creek. Impacts to downstream runoff conveyance elements are not expected given that runoff rates and volumes mimic historic rates (see Attachment E).**

- 3) Could waste materials enter ground or surface waters? If so, generally describe.  
**None anticipated.**

d. Proposed measures to reduce or control surface, ground, and runoff water impacts, if any:

Level 2 Detention Vault and Dispersion trench BMP's (See Attachment E). .

#### 4. Plants

a. Check or circle types of vegetation found on the site: (see Attachments A and B)

\_\_\_\_\_ deciduous tree: alder, maple, aspen, other

\_\_\_\_\_ evergreen tree: fir, cedar, pine, other

\_\_\_\_\_ shrubs

\_\_\_\_\_ grass

\_\_\_\_\_ pasture

\_\_\_\_\_ crop or grain

\_\_\_\_\_ wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other

\_\_\_\_\_ water plants: water lily, eelgrass, milfoil, other

\_\_\_\_\_ other types of vegetation: **Invasives (see Attachments A and B)**

b. What kind and amount of vegetation will be removed or altered?

**Vegetation removal, including trees, is best understood by reviewing site plan submitted with this application. . The existing, degraded Stream and Wetland Buffers will be restored as part of project (see Attachment B).**

c. List threatened or endangered species known to be on or near the site.

**No listed species are known on or near the subject property. The stream delineation report indicates that the stream is above a barrier to fish passage, so it is expected that no listed fish species are present in the stream (see Attachment A).**

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:

**The project proposal includes the restoration of the existing wetland/stream buffer to remove manmade debris, invasive species. Attachment B contains the proposed buffer landscaping plan.**

## 5. Animals

- a. Circle any birds and animals which have been observed on or near the site or are known to be on or near the site:

birds: hawk, heron, eagle, songbirds, other: crow

mammals: deer, bear, elk, beaver, other: gray squirrel

fish: bass, salmon, trout, herring, shellfish, other:

- b. List any threatened or endangered species known to be on or near the site.

**No listed species are known on or near the subject property. The stream delineation report indicates that the stream is above a barrier to fish passage, so it is expected that no listed fish species are present in the stream (see Attachment A).**

Is the site part of a migration route? If so, explain.

**No.**

- b. Proposed measures to preserve or enhance wildlife, if any:

**Buffer restoration along Champagne Creek includes re-establishment of native vegetation and removal of man-made debris along the riparian corridor and buffers.**

## 6. Energy and natural resources

- a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.

**Electric and natural gas will be utilized for the proposed ten residential units.**

- b. Would your project affect the potential use of solar energy by adjacent properties?

If so, generally describe.

**No.**

- c. What kinds of energy conservation features are included in the plans of this proposal?

List other proposed measures to reduce or control energy impacts, if any:

**High efficiency heating systems and built green measures will be utilized in the proposed ten residential units.**

## 7. Environmental health

- a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal?

If so, describe.

**None.**

- 1) Describe special emergency services that might be required.

**None.**

- 2) Proposed measures to reduce or control environmental health hazards, if any:

**As a component of the erosion and sediment control plan, equipment staging and fueling areas will be identified and appropriate spill prevention measures will be implemented. For the culvert removal, the excavator used to install the diversion, remove the culvert, and restore the stream channel will use mineral oil in lieu of hydraulic fluid in order to avoid the potential for hydraulic fluid to enter the riparian corridor.**

b. **Noise**

- 1) What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?

**NE 122nd Place currently experiences traffic noise consistent with a road of this type.**

- 2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site.

**Construction activity from 8 a.m. to 6 p.m., spring 2016 thru spring 2018**

- 3) Proposed measures to reduce or control noise impacts, if any:

**None proposed.**

8. **Land and shoreline use**

- a. What is the current use of the site and adjacent properties?

**The subject property and surrounding sites are all currently single family residential.**

- b. Has the site been used for agriculture? If so, describe.

**No.**

- c. Describe any structures on the site.

**The property is developed and contains a single family residence, detached garage/storage area, shed, gravel driveway and parking area, vegetated riparian corridor, and lawn areas.**

- d. Will any structures be demolished? If so, what?

**Yes, all existing structures will be demolished to make way for proposed ten residential units.**

- e. What is the current zoning classification of the site?

**RMA 2.4**

- f. What is the current comprehensive plan designation of the site?

**RMA 2.4**

- g. If applicable, what is the current shoreline master program designation of the site?

**N/A**

- h. Has any part of the site been classified as an "environmentally sensitive" area? If so, specify.

**Yes, see attached wetland and stream report (Attachment A).**

- i. Approximately how many people would reside or work in the completed project?

**25 (2.5 per unit on average)**

- j. Approximately how many people would the completed project displace?

**3 (currently a rental property).**

- k. Proposed measures to avoid or reduce displacement impacts, if any:

**None. No displacement is expected.**

- l. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:

**The proposed project falls within the allowable use and density for the subject property.**

9. **Housing**

- a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.  
**10 middle-income residential units are proposed.**
- b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.  
**1 middle income rental property would be eliminated.**
- c. Proposed measures to reduce or control housing impacts, if any:  
**None. No housing impacts are expected.**

10. **Aesthetics**

- a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?  
**The proposed building maximum height is approximately 30 '. The buildings would be sided with hardi panel siding.**
- b. What views in the immediate vicinity would be altered or obstructed?  
**None. The existing development has only territorial views of the surrounding parcels.**
- c. Proposed measures to reduce or control aesthetic impacts, if any:  
**None.**

11. **Light and glare**

- a. What type of light or glare will the proposal produce? What time of day would it mainly occur?  
**Residential exterior lighting would be provided on each residential unit and street lighting would be provided, as necessary. No new glare impacts are projected outside of the subject property.**
- b. Could light or glare from the finished project be a safety hazard or interfere with views?  
**No.**
- c. What existing off-site sources of light or glare may affect your proposal?  
**None anticipated or known.**
- d. Proposed measures to reduce or control light and glare impacts, if any:  
**None.**

12. **Recreation**

- a. What designated and informal recreational opportunities are in the immediate vicinity?  
**Open space would be provided onsite and City parks are located in the in immediate vicinity of the subject property.**
- b. Would the proposed project displace any existing recreational uses? If so, describe.  
**No.**

- c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:  
**None.**

### 13. Historic and cultural preservation

- a. Are there any places or objects listed on, or proposed for, national, state, or local preservation registers known to be on or next to the site? If so, generally describe.  
**None anticipated or known.**
- b. Generally describe any landmarks or evidence of historic, archaeological, scientific, or cultural importance known to be on or next to the site.  
**None.**
- c. Proposed measures to reduce or control impacts, if any:  
**None.**

### 14. Transportation

- a. Identify public streets and highways serving the site, and describe proposed access to the existing street system. Show on site plans, if any.  
**NE 122nd Pl abuts property and will serve as access.**
- b. Is site currently served by public transit? If not, what is the approximate distance to the nearest transit stop?  
**No. The nearest transit stop is located approximately 300 feet from the subject property.**
- c. How many parking spaces would the completed project have? How many would the project eliminate?  
**22 created, 2 eliminated (net increase of 20 or 2 per unit).**
- d. Will the proposal require any new roads or streets, or improvements to existing roads or streets, not including driveways? If so, generally describe (indicate whether public or private).  
**One private street to be provided for access, see site plan.**
- e. Will the project use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.  
**No.**
- f. How many vehicular trips per day would be generated by the completed project? If known, indicate when peak volumes would occur.  
**Estimated weekday trips: 30 (20 trips/day during am/pm peak hours and 10 trips/day during the evening). Estimated Weekend trips would likely be less.**
- g. Proposed measures to reduce or control transportation impacts, if any:  
**None.**

### 15. Public services

- a. Would the project result in an increased need for public services (for example: fire protection, police protection, health care, schools, other)? If so, generally describe.  
**No.**
- b. Proposed measures to reduce or control direct impacts on public services, if any.  
**None.**

16. **Utilities**

a. Circle utilities currently available at the site: electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other.

**All utilities are available in NE 122nd Place.**

b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed.

**PSE to provide gas and electric service  
Northshore to provide water, sewer, garbage**

C. SIGNATURE

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

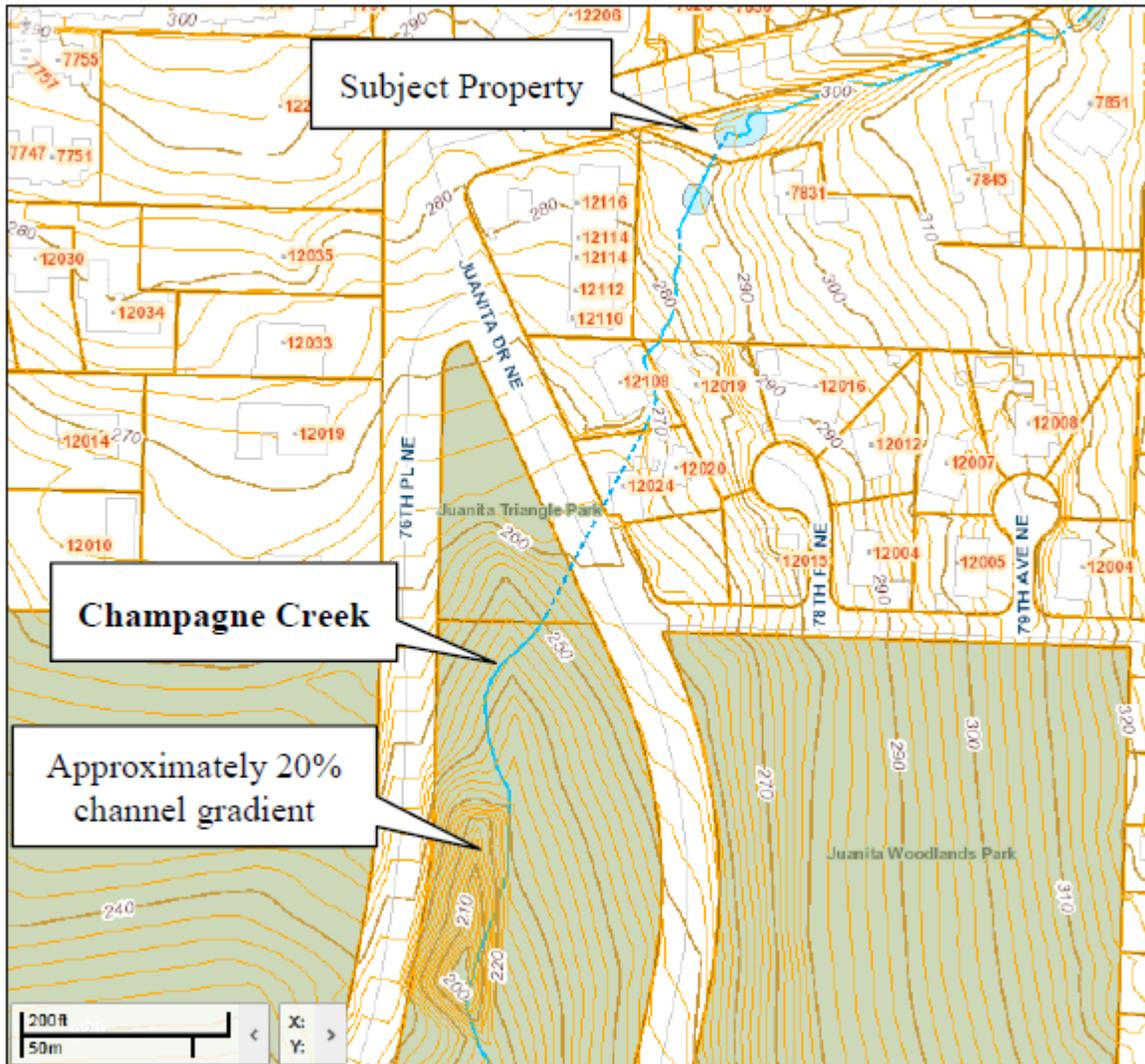
Signature:



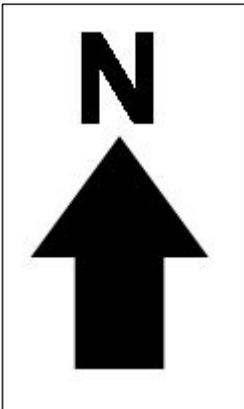
**Bill Granger  
Re-Align Environmental  
(Planning and Environmental Consultant)**

Date Submitted: **2/25/16**

## Vicinity Map



Source: The Watershed Company, 2014



**Figure 1**

**Location Map**

**Kirkland Cottages**

## Site Plan

**PROJECT SITE DATA**

OWNER: CHANDLER HOMES  
 SITE ADDRESS: 10220 NE 110TH ST, KIRKLAND, WA 98034  
 TAX ACCT. NO.: 607650-0421  
 TOTAL GROSS AREA: 46,753 SF

**PROJECT CONTACT LIST**

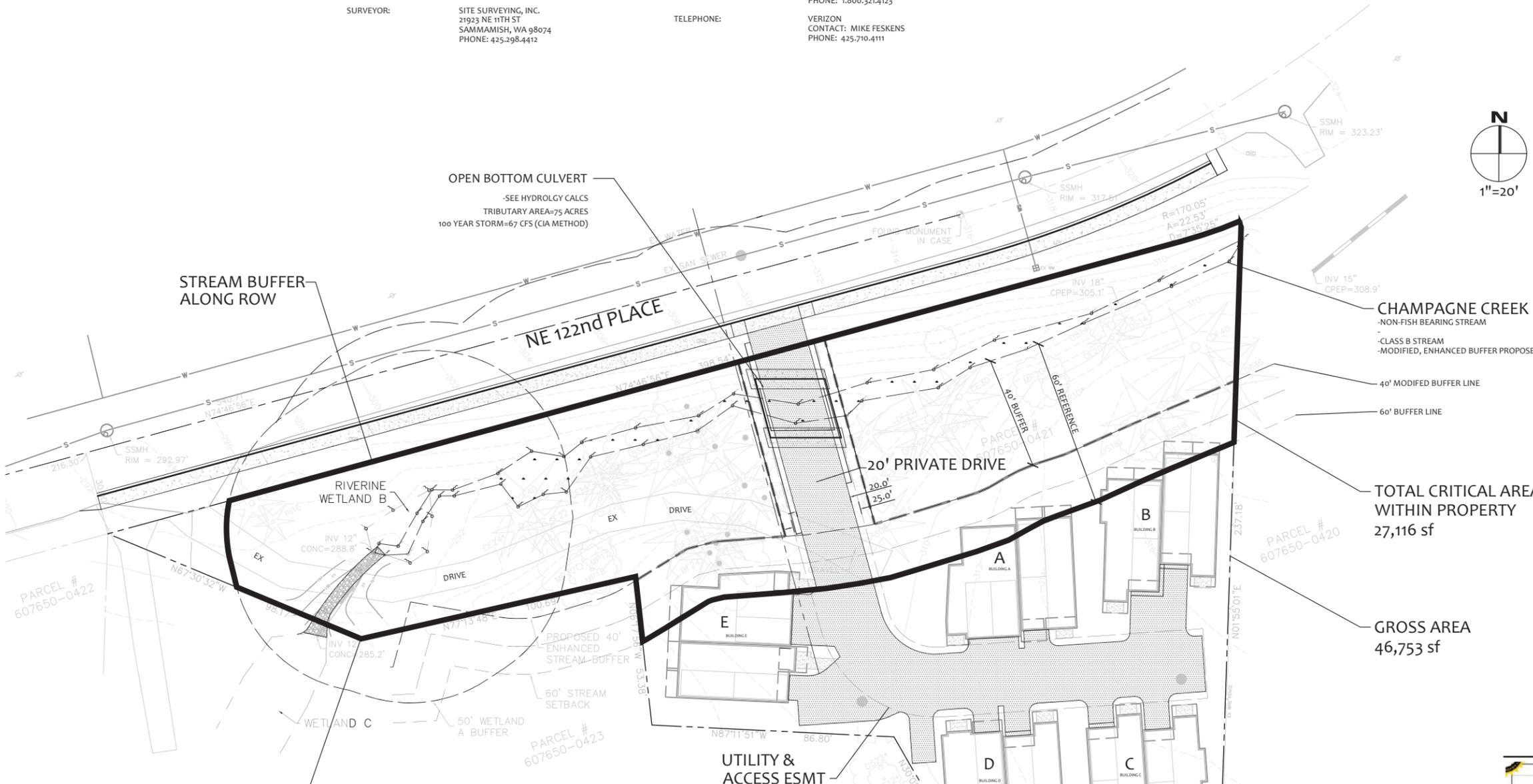
OWNER: CHANDLER HOMES  
 ENGINEER: CIVIL ENGINEERING SOLUTIONS, 2244 NW MARKET STREET, SUITE B SEATTLE, WA 98107  
 CONTACT: DUFFY ELLIS, PE  
 PHONE: 206.930.0342  
 DUFFY@CESOLUTIONS.US  
 SURVEYOR: SITE SURVEYING, INC., 21933 NE 11TH ST SAMMAMISH, WA 98074  
 PHONE: 425.298.4412

**UTILITY CONTACT LIST**

SANITARY SEWER: \*  
 WATER: \*  
 ELECTRIC: PUGET SOUND ENERGY, PHONE: 1.800.321.4123  
 GAS: PUGET SOUND ENERGY, PHONE: 1.800.321.4123  
 TELEPHONE: VERIZON, CONTACT: MIKE FESKENS, PHONE: 425.710.4111



**KIRKLAND COTTAGES  
 SITE PLAN / DENSITY CALC**



OPEN BOTTOM CULVERT  
 -SEE HYDROLOGY CALCS  
 TRIBUTARY AREA=75 ACRES  
 100 YEAR STORM=67 CFS (CIA METHOD)

STREAM BUFFER  
 ALONG ROW

CHAMPAGNE CREEK  
 -NON-FISH BEARING STREAM  
 -CLASS B STREAM  
 -MODIFIED, ENHANCED BUFFER PROPOSED

TOTAL CRITICAL AREA  
 WITHIN PROPERTY  
 27,116 sf

GROSS AREA  
 46,753 sf

**PARKING ANALYSIS**  
 REQUIRED FOR DWELLING UNITS: 10 UNITS x 1.8 SPACES = 18 SPACES  
 PROVIDED FOR DWELLING UNITS: 10 UNITS x 2 SPACES = 20 SPACES (COMPLIES)

REQUIRED GUEST/VISITOR PARKING:  
 10% OF REQUIRED SPACES FOR DWELLING UNITS, EXCEPT MAY EXCLUDE UNITS  
 WITH GUEST PARKING IN DRIVEWAYS:  
 7 UNITS x 1.8 SPACES x 10% = 1.56  
 = 2 REQUIRED GUEST/VISITOR SPACES  
 PROVIDED GUEST/VISITOR PARKING: 2 SPACES (COMPLIES)

**AFFORDABLE HOUSING**  
 KZC 112.15 SAYS THAT DEVELOPMENTS OF 4+ UNITS MUST HAVE 10%  
 AFFORDABLE HOUSING UNITS, SO FOR A 10 UNIT DEVELOPMENT, 1  
 AFFORDABLE UNIT WOULD BE REQUIRED. UNIT C OF DUPLEX PAIR #5 IS THE  
 DESIGNATED AFFORDABLE HOUSING UNIT

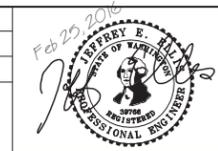
**DENSITY CALC**

Chandler Homes Cottage Site Density Calculation		
Item	calculation #	Comments
Gross Site Area	46,753	
Critical Area	27,116	total area of stream/wetland and buffer area within property
Net Area	19,637	Net-Gross minus critical area and buffer
Critical Area Percent	58.0%	This number used below as required for density calc
Min lot area	2,400	Both 2400 and 3600 versions tried. Not sure which is correct min lot area per zoning table
Density Calculation Part 1 (net area)	8.18	Divide net area by min lot area
Allowed DU calculated part 1	8.18	lots allowed for "net" area
Density Calculation Part 2 (critical area)	11.30	gross lots allowed for critical area portion
Allowed DU part 2 (unadjusted)	11.30	
Adjustment factor	0.50	Adjustment factor per City table based on site's percent critical area
DU calculated part 2 (adjusted)	5.65	lot count reduced per adjustment factor
Allowed lots (non rounded)	13.83	combine lot count (non rounded)
Allowed density	13	adjust count based on fraction above or below 0.5

NO	DATE	BY	REVISIONS

APPLICANT  
 CHANDLER HOMES  
 10220 NE 110TH STREET  
 KIRKLAND, WA 98033

DATE: Feb 25, 2016  
 DRAFTED: SS DESIGN: DE  
 DIGITAL SIGNATURE



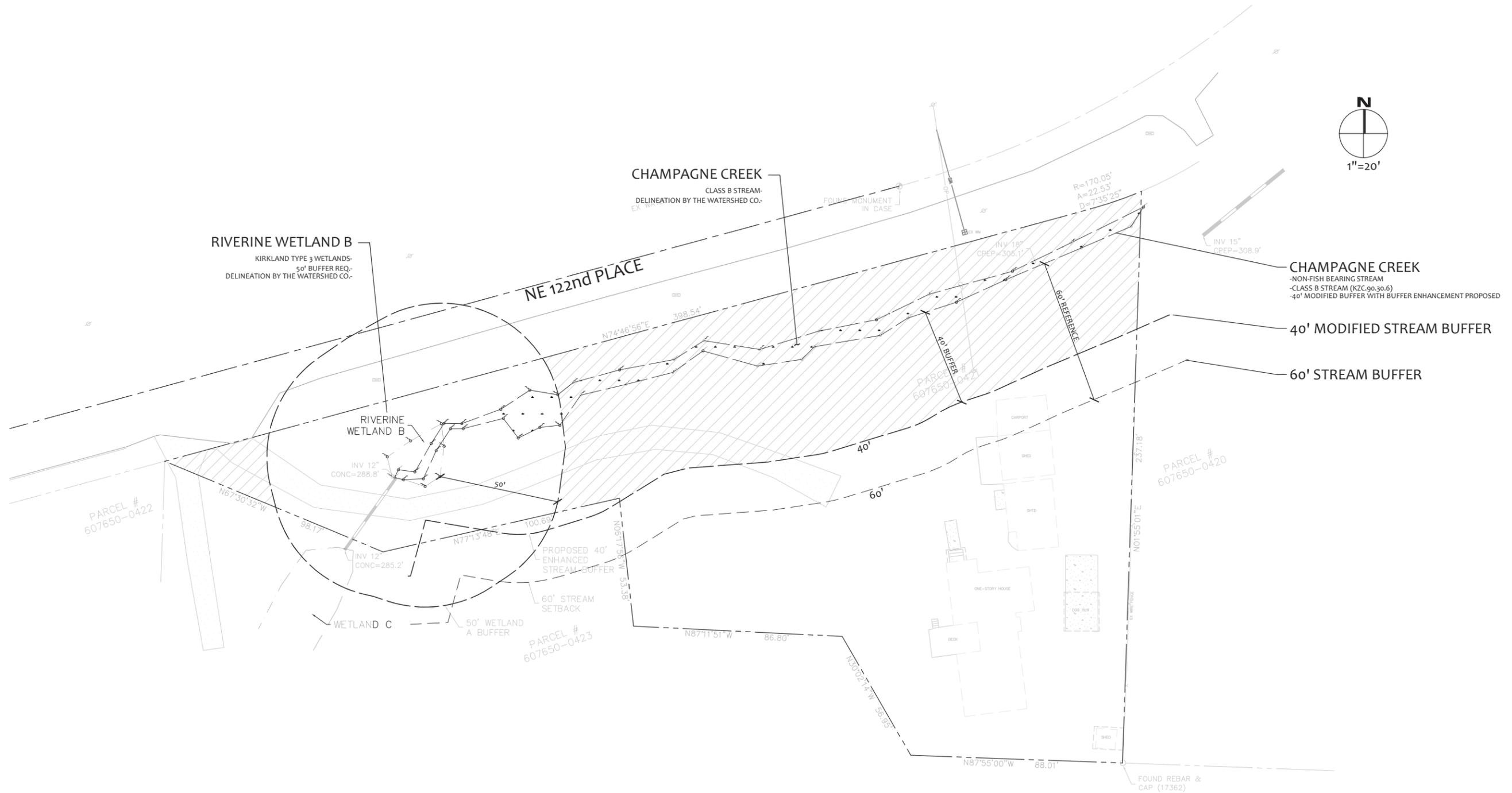
**CIVIL ENGINEERING SOLUTIONS**  
 2244 NW MARKET STREET, SUITE B SEATTLE, WA 98107  
 PHONE: 206.930.0342 DUFFY@CESOLUTIONS.US

**KIRKLAND COTTAGES SITE PLAN**  
 IRLAND OTTAGES  
 NE PLAE IRLAND A 3

DRAWING NO. **C1.0**  
 APN



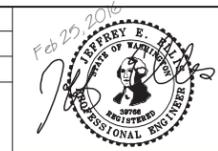
# KIRKLAND COTTAGES SURVEY SHEET#2



NO	DATE	BY	REVISIONS

APPLICANT  
CHANDLER HOMES  
10220 NE 110TH STREET  
KIRKLAND, WA 98033

DATE: Feb 25, 2016  
DRAFTED: SS DESIGN: DE  
DIGITAL SIGNATURE



**CIVIL ENGINEERING SOLUTIONS**  
2244 NW MARKET STREET, SUITE B SEATTLE, WA 98107  
PHONE: 206.930.0342 DUFFY@CESOLUTIONS.US

SURVEY SHEET 2  
KIRKLAND COTTAGES  
NE 122nd Place Kirkland WA

DRAWING NO. S0.1  
APN

**PROJECT SITE DATA**

OWNER: CHANDLER HOMES  
 SITE ADDRESS: 10220 NE 110TH ST, KIRKLAND, WA 98034  
 TAX ACCT. NO.: 607650-0421  
 TOTAL GROSS AREA: 42,028 S.F. OR ( 0.96 ACRES±)

**PROJECT CONTACT LIST**

OWNER: CHANDLER HOMES  
 ENGINEER: CIVIL ENGINEERING SOLUTIONS, 2244 NW MARKET STREET, SUITE B, SEATTLE, WA 98107  
 CONTACT: DUFFY ELLIS, PE  
 PHONE: 206.930.0342  
 DUFFY@CESOLUTIONS.US  
 SURVEYOR: SITE SURVEYING, INC., 21923 NE 11TH ST, SAMMAMISH, WA 98074  
 PHONE: 425.298.4412

**UTILITY CONTACT LIST**

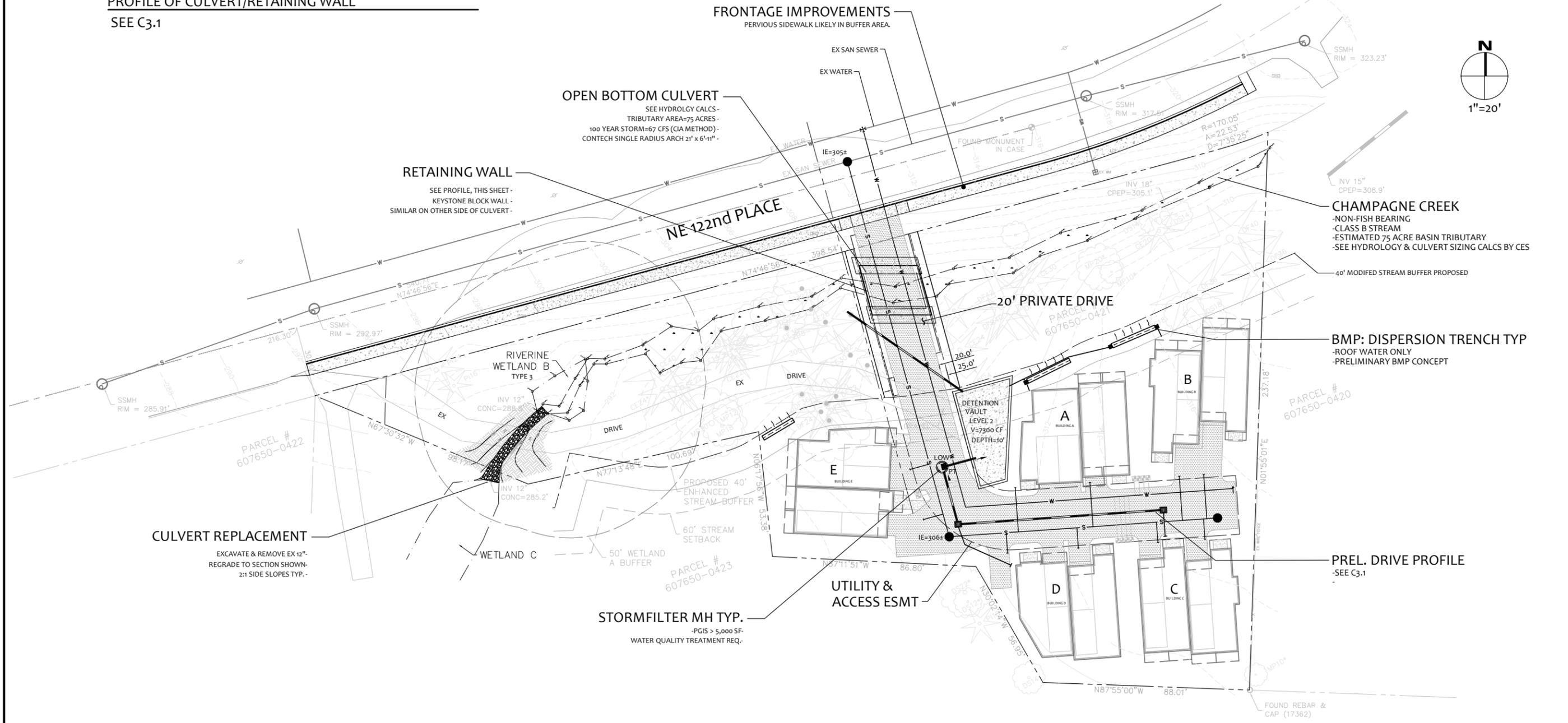
SANITARY SEWER: CITY OF KIRKLAND  
 WATER: CITY OF KIRKLAND  
 ELECTRIC: PUGET SOUND ENERGY, PHONE: 1.800.321.4123  
 GAS: PUGET SOUND ENERGY, PHONE: 1.800.321.4123  
 TELEPHONE: VERIZON, CONTACT: MIKE FESKENS, PHONE: 425.710.4111



# KIRKLAND COTTAGES

## PRELIMINARY ENGINEERING

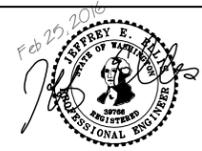
**PROFILE OF CULVERT/RETAINING WALL**  
 SEE C3.1



NO.	DATE	BY	REVISIONS

APPLICANT  
 CHANDLER HOMES  
 10220 NE 110TH STREET  
 KIRKLAND, WA 98033

DATE: Feb 25, 2016  
 DRAFTED: SS DESIGN: DE  
 DIGITAL SIGNATURE



**CIVIL ENGINEERING SOLUTIONS**  
 2244 NW MARKET STREET, SUITE B SEATTLE, WA 98107  
 PHONE: 206.930.0342 DUFFY@CESOLUTIONS.US

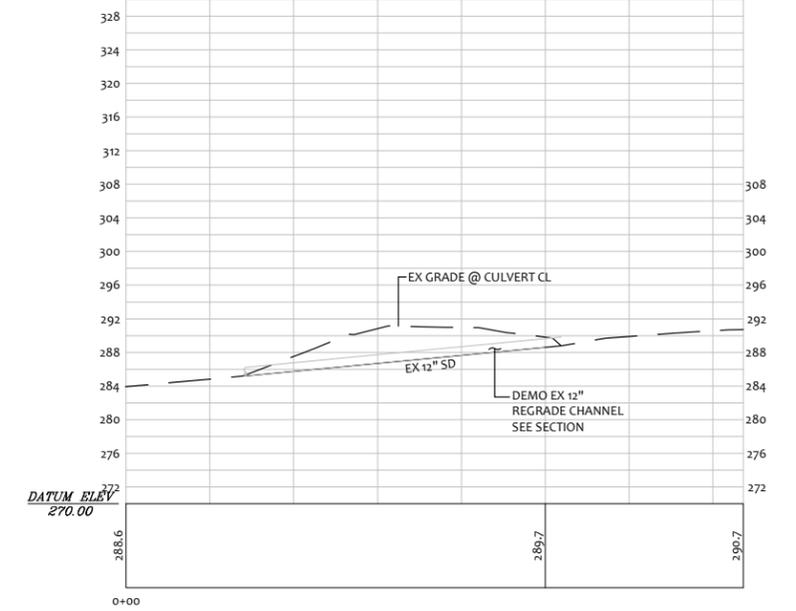
**PRELIMINARY ENGINEERING PLAN**  
 KIRKLAND COTTAGES  
 10220 NE 110TH ST, KIRKLAND, WA 98033

DRAWING NO. **C3.0**  
 APN: 607650-0421

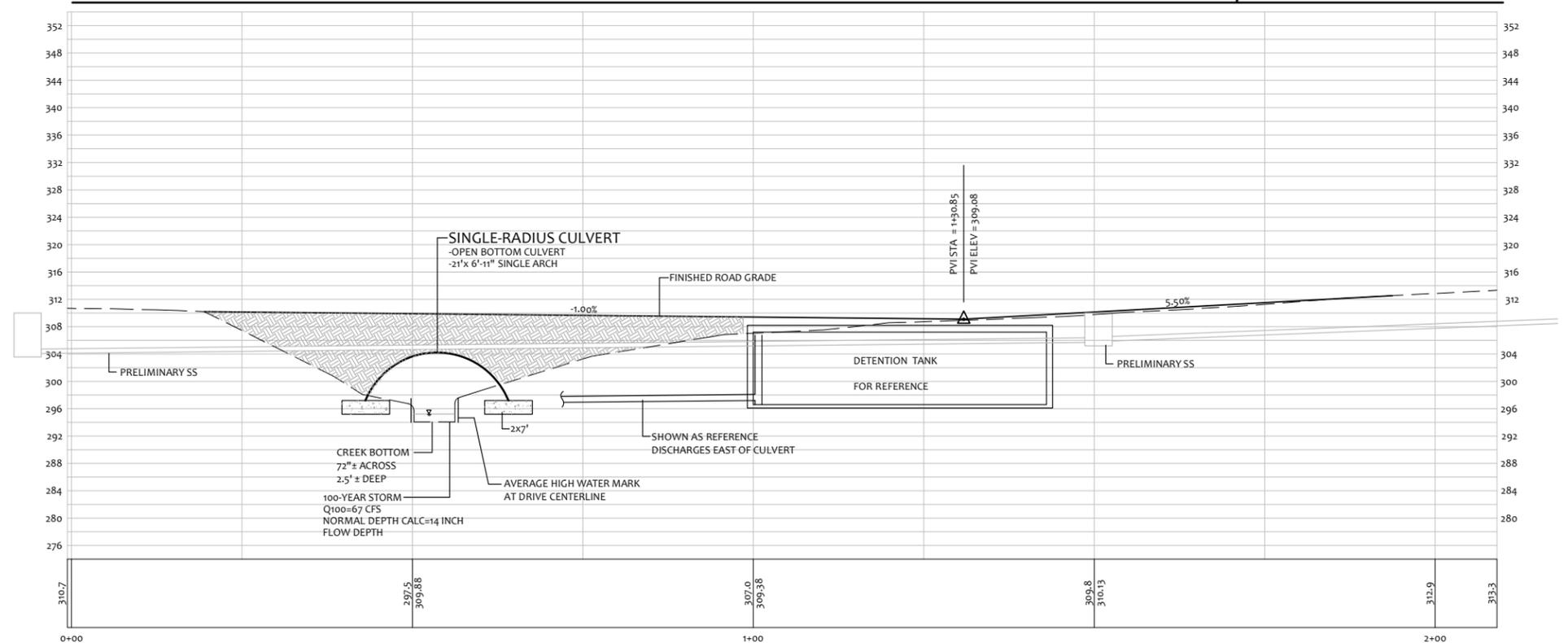


# KIRKLAND COTTAGES PRELIMINARY ENGINEERING

## CULVERT REMOVAL PROFILE



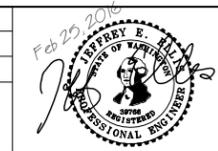
## ROAD / CULVERT PROFILE



NO.	DATE	BY	REVISIONS

APPLICANT  
 CHANDLER HOMES  
 10220 NE 110TH STREET  
 KIRKLAND, WA 98033

DATE: Feb 25, 2016  
 DRAFTED: SS DESIGN: DE  
 DIGITAL SIGNATURE



**CIVIL ENGINEERING SOLUTIONS**  
 2244 NW MARKET STREET, SUITE B SEATTLE, WA 98107  
 PHONE: 206.930.0342 DUFFY@CESOLUTIONS.US

**PRELIMINARY ROAD PROFILE / CULVERT**  
 KIRKLAND COTTAGES  
 NE PLAE KIRKLAND A

DRAWING NO. **C3.1**  
 APN

**Attachment A**

**Wetland and Stream Delineation Report by The Watershed Company, September 2014**

September 10, 2014

Tony Leavitt  
City of Kirkland  
Planning and Community Development  
123 Fifth Avenue  
Kirkland, WA 98033

## **Re: Thornquist Property (Chandler Homes), Wetland and Stream Delineation Report**

The Watershed Company Reference Number: 140622.7

Dear Tony:

On August 28, 2014, Ecologist Nell Lund, PWS and Katy Crandall visited the property located at 7845 NE 122<sup>nd</sup> Street in Kirkland (Parcel #6076500421). The purpose of the visit was to conduct a wetland and stream delineation review/study. This letter summarizes the findings of this study and details applicable federal, state, and local regulations. The following attachments are included:

- Delineation Sketch
- Wetland Data Sheets
- Kirkland Rating Form
- Ecology Rating Form

### **Methods**

Public-domain information for the subject property was reviewed prior to the fieldwork. These sources include USDA Natural Resources Conservation Service Soil maps, U.S. Fish and Wildlife Service National Wetland Inventory maps, Washington Department of Fish and Wildlife interactive mapping programs (PHS on the Web and SalmonScope), Washington State Department of Natural Resources Forest Practices Activity Mapping Tool (FPARS), City of Kirkland GIS Maps, King County's GIS mapping website (iMAP), and Kirkland's Streams, Wetlands, and Wildlife Study (The Watershed Company 1998).

The study area was evaluated for wetlands using methodology from the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region Version 2.0* (Regional Supplement) (US Army Corps of Engineers [Corps] May 2010). The wetland boundary was determined on the basis of an examination of vegetation, soils, and hydrology. Areas meeting the criteria set forth in

the Regional Supplement were determined to be wetland. Soil, vegetation, and hydrologic parameters were sampled at several locations along the wetland boundary to make the determination. Data points on-site are marked with yellow- and black-striped flags. Data were recorded at two of these locations.

Delineated wetlands were classified using the *City of Kirkland Wetland Field Data Form* (Kirkland Rating System) and the *Western Washington Wetland Rating System* (Ecology, Aug 2004, version 2) (Ecology Rating System). Wetland A is marked with 8 pink- and black-striped flags.

The ordinary high water mark (OHWM) of Champagne Creek was reviewed and determined based on the definition provided by the Washington Department of Fish and Wildlife and WAC 220-110-020(69). The OHWM is located by examining the bed and bank physical characteristics and vegetation to ascertain the water elevation for mean annual floods. Field observations and online maps were used to classify streams according to Chapter 90 of the Kirkland Zoning Code (KZC).

All fieldwork for this project was conducted on the subject property and public roadways; entry to adjacent private properties was not attempted.

## **Findings**

The subject parcel is located in the Finn Hill neighborhood in the City of Kirkland, in the Champagne Creek Drainage Basin – a primary basin. The property is developed and contains a single family residence, detached garage/storage area, shed, gravel driveway and parking area, vegetated riparian corridor, and lawn areas. Upland riparian vegetation consists of western red cedar, red alder, and bigleaf maple in the canopy with Indian plum, salmonberry, English holly, sword fern, and English ivy common in the understory. One stream (Champagne Creek) and one wetland were delineated, and a nearby off-site wetland was rated; they are described below.

### *Wetland A*

Wetland A is located on the west side of the subject property. It is a relatively small riverine wetland with a scrub-shrub Cowardin vegetation community dominated by Himalayan blackberry, reed canarygrass, giant horsetail and bindweed. Soils are a dark (10 YR 2/2) sandy loam with redoximorphic concentrations located in the top nine inches. It meets hydric soil indicator Redox Dark Surface (F6). Soils were saturated at five inches and a water table was present at ten inches below the ground surface. The primary hydrologic source is overbank flooding from Champagne Creek.

*Wetland B*

Wetland B is a riverine wetland located off-site, southwest of the subject property. It contains forested and emergent Cowardin vegetation communities. Common vegetation includes a blue spruce in the canopy with Himalayan blackberry, reed canarygrass, small-fruited bulrush, and giant horsetail common in the understory. Wetland B is also hydrologically supported by Champagne Creek.

*Champagne Creek*

Champagne Creek is a permanently-flowing drainage that flows west-southwest through the subject property. It enters the property via an open channel from the northeast. Champagne Creek appears to originate in a steep ravine approximately 1,000 feet northeast of the subject property. South of the property, Champagne Creek flows under Juanita Drive NE into Juanita Triangle Park. From there, the stream generally flows south until it reaches Lake Washington. Downstream portions of Champagne Creek likely support salmonid fish species. The presence of cutthroat trout was documented in Kirkland's Streams, Wetlands, and Wildlife Study (The Watershed Company 1998). A relatively steep section of Champagne Creek exists below the subject property. Using the City's interactive mapping program, this gradient was calculated to be approximately 20 percent which is considered a barrier to fish migration. Salmonids are not expected in Champagne Creek through the study area due to the downstream gradient barrier.

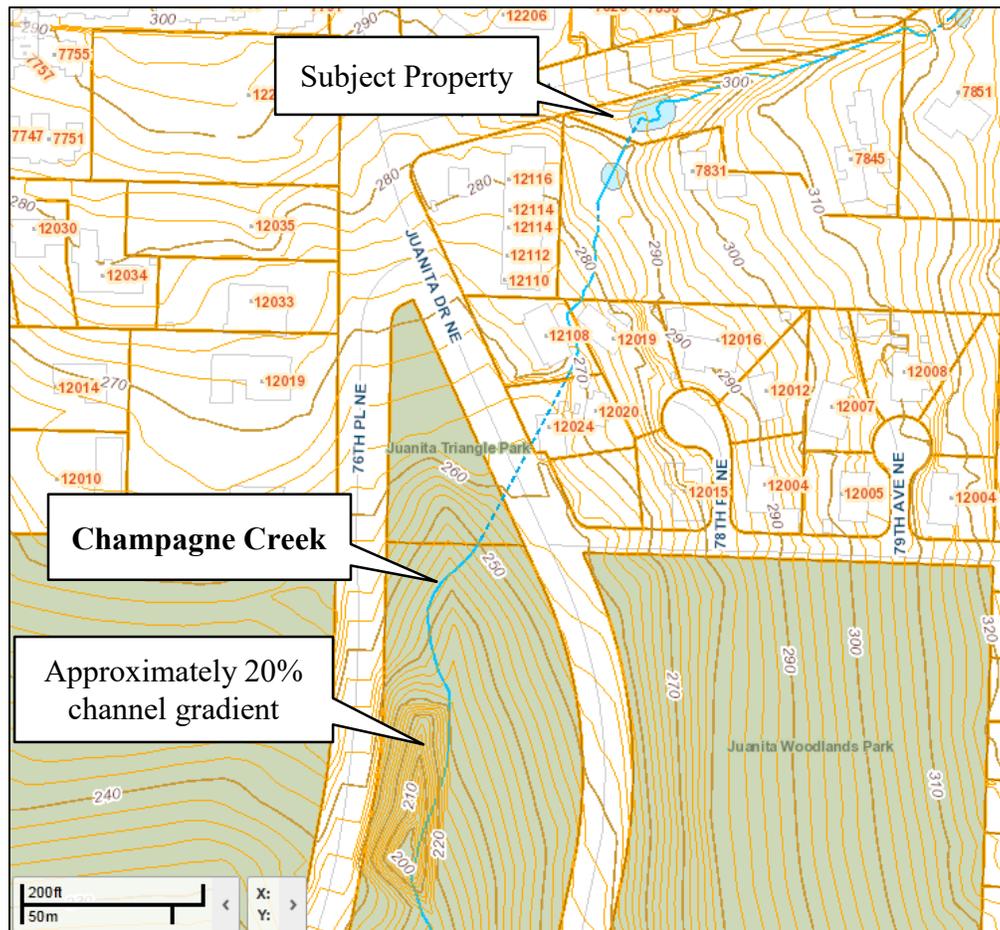


Figure 1. Topographic map of Champagne Creek downstream from the study area showing the increased channel gradient.

### Local Regulations

Streams and wetlands in Kirkland are regulated under Chapter 90 of the Kirkland Zoning Code (KZC).

Under KZC, wetlands are classified as one of three types based on the Kirkland Rating System. According to the Kirkland Rating System, Wetlands A and B do not satisfy any of the criteria specific to Type 1 wetlands. Based on the functional scoring, Wetland A received a total of 13 points, and Wetland B received a total of 21 points. These scores qualify both Wetlands A and B as Type 3 wetlands.

For thoroughness, the wetlands were also rated using the 2004 Ecology Rating System, Wetland A scores 24 points for hydrology, 18 points for water quality, 12 points for habitat, and 54 points overall. Wetland B scores 20 points for hydrology, 18 points for water quality, 14 points for habitat, and 52 points overall. These scores qualify Wetlands

A and B as Category II wetlands using Ecology's Rating System. Note that a 2014 substantially revised version of the rating system was initially released by Ecology and subsequently withdrawn due to typographical errors.

Wetland buffers in Kirkland are determined based on the wetland type (Kirkland Rating System) and whether the encompassing drainage basin is a primary or secondary basin. The standard buffer for Type 3 wetlands located in a primary basin is 50 feet (KZC 90.45.1).

Streams in Kirkland are classified as one of three classes based on duration of flow and the presence of salmonid fish species. As a perennial stream, that does not contain salmonid fish species, Stream A is classified as a Class B stream (KZC.90.30.6). Stream buffers in Kirkland are determined based on the stream class and the status of the encompassing drainage basin. Class B streams in a primary basin are required to have a standard buffer width of 60 feet as measured from the OHWM (KZC.90.90.1).

The City of Kirkland requires a structure setback of 10 feet from the edge of wetland and stream buffers.

### **State and Federal Regulations**

Wetlands and streams are also regulated by the U.S. Army Corps of Engineers (Corps) under section 404 of the Clean Water Act. Any filling of Waters of the State would require notification and permits from the Corps. Federally permitted actions that could affect endangered species (i.e. salmon or bull trout) may also require a biological assessment study and consultation with the U.S. Fish and Wildlife Service and/or the National Marine Fisheries Service. Application for Corps permits may also require an individual 401 Water Quality Certification and Coastal Zone Management Consistency determination from Ecology.

In general, neither the Corps nor Ecology regulates buffers, unless direct impacts are proposed. When direct impacts are proposed, mitigated wetlands may be required to employ buffers based on Corps and Ecology joint regulatory guidance.

### **Disclaimer**

The information contained in this letter or report is based on the application of technical guidelines currently accepted as the best available science and in conjunction with the manuals and criteria outlined in the methods section. All discussions, conclusions and recommendations reflect the best professional judgment of the author(s) and are based upon information available to us at the time the study was conducted. All work was completed within the constraints of budget, scope, and timing. The findings of this

report are subject to verification and agreement by the appropriate local, State and Federal regulatory authorities. No other warranty, expressed or implied, is made.

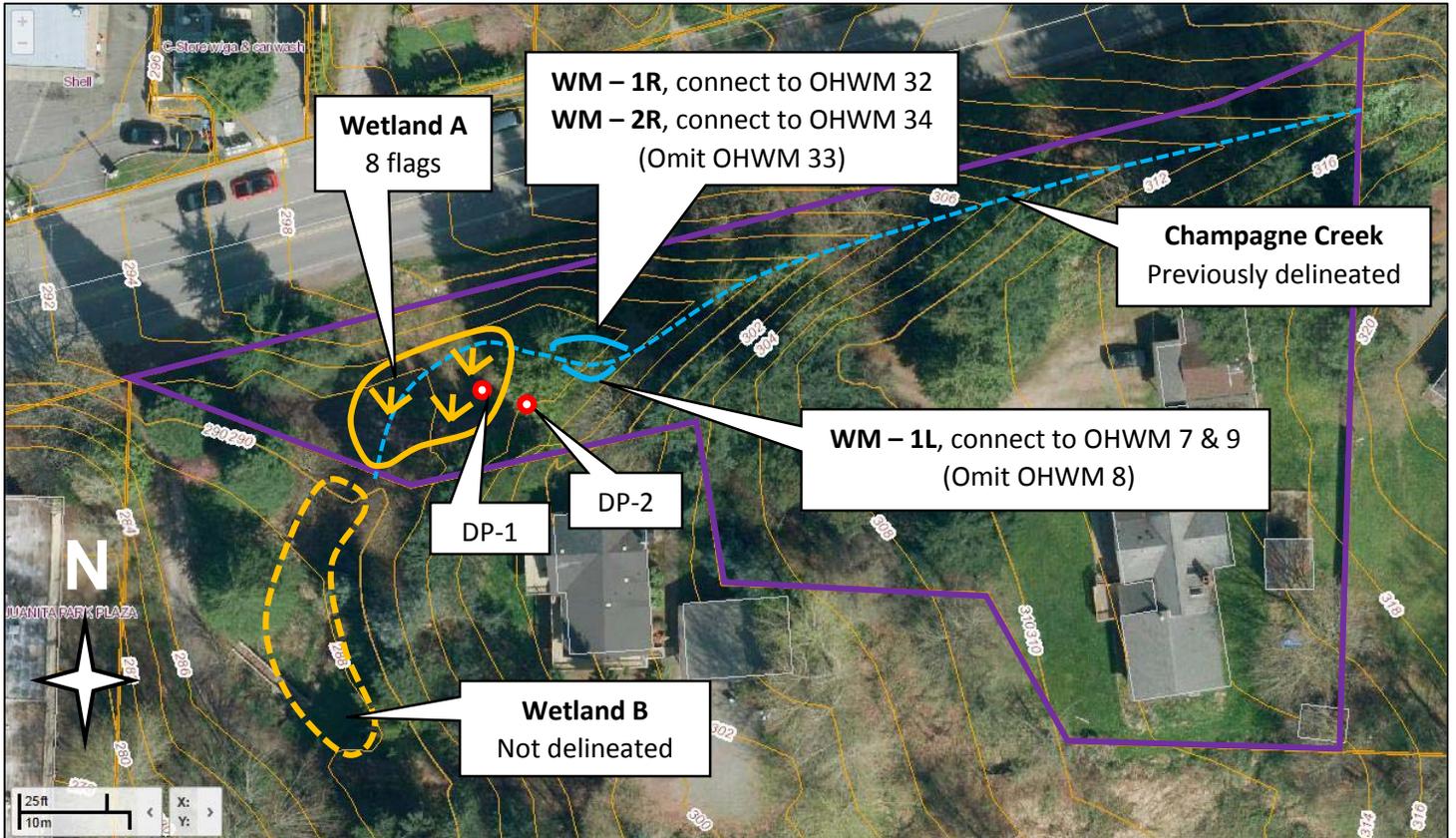
Please call if you have any questions or if we can provide you with any additional information.

Sincerely,

A handwritten signature in cursive script that reads "Katy Crandall".

Katy Crandall, WPIT  
Ecologist

Enclosures



**Thornquist Property, Wetland and Stream Delineation**

Prepared for: Tony Leavitt, City of Kirkland  
Parcel Number: 6076500421  
7845 Ne 122<sup>nd</sup> Place  
Kirkland, WA 98033

Delineation date: August 28, 2014  
TWC Ref. No. 140622.7

**Note:** This is a field sketch. Wetland areas not surveyed.  
Areas depicted are *approximate* and not to scale.

Wetland Flags: pink- and black-striped  
**Old** Stream Flags: blue- and white- striped  
**New** Stream Flags: blue- and white- striped  
w/ yellow- and black- striped  
DP Flags: yellow- and black-striped

**LEGEND:**

- Delineated Wetland Edge
- Not Delineated
- Wetland Area
- Previously Delineated Stream flags (already surveyed)
- New Stream Flags (not surveyed)
- Data Point (DP)
- Subject Property

<b>DP- 1</b>
--------------

Project Site: <b>Thornquist Property</b>		Sampling Date: <b>08/28/2014</b>	
Applicant/Owner: <b>Thornquist</b>		Sampling Point: <b>DP- 1</b>	
Investigator: <b>N. Lund, K. Crandall</b>		City/County: <b>Kirkland</b>	
Sect., Township, Range: <b>S 25 T 26N R 04E</b>		State: <b>WA</b>	
Landform (hillslope, terrace, etc): <b>Hillslope</b>	Slope (%): <b>&lt;5</b>	Local relief (concave, convex, none): <b>Concave</b>	
Subregion (LRR): <b>A</b>	Lat:	Long:	Datum:
Soil Map Unit Name: <b>AgC – Alderwood gravelly sandy loam</b>		NWI classification:	<b>NA</b>
Are climatic/hydrologic conditions on the site typical for this time of year? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		(If no, explain in remarks.)	
Are "Normal Circumstances" present on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> significantly disturbed?			
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> 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? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Is this Sampling Point within a Wetland? <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	
Remarks:	

**VEGETATION – Use scientific names of plants.**

Tree Stratum (Plot size 5m diam. )	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet																					
1.				Number of Dominant Species that are OBL, FACW, or FAC: <b>2</b> (A) Total Number of Dominant Species Across All Strata: <b>3</b> (B) Percent of Dominant Species that are OBL, FACW, or FAC: <b>67</b> (A/B)																					
2.																									
3.																									
4.																									
_____ = Total Cover																									
Sapling/Shrub Stratum (Plot size 3m diam. )	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index Worksheet																					
1.				<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="2">Total % Cover of</th> <th>Multiply by</th> </tr> <tr> <td>OBL species</td> <td></td> <td>x 1 =</td> </tr> <tr> <td>FACW species</td> <td></td> <td>x 2 =</td> </tr> <tr> <td>FAC species</td> <td></td> <td>x 3 =</td> </tr> <tr> <td>FACU species</td> <td></td> <td>x 4 =</td> </tr> <tr> <td>UPL species</td> <td></td> <td>x 5 =</td> </tr> <tr> <td>Column totals</td> <td>(A)</td> <td>(B)</td> </tr> </table>	Total % Cover of		Multiply by	OBL species		x 1 =	FACW species		x 2 =	FAC species		x 3 =	FACU species		x 4 =	UPL species		x 5 =	Column totals	(A)	(B)
Total % Cover of		Multiply by																							
OBL species		x 1 =																							
FACW species		x 2 =																							
FAC species		x 3 =																							
FACU species		x 4 =																							
UPL species		x 5 =																							
Column totals	(A)	(B)																							
2.																									
3.																									
4.																									
5.																									
_____ = Total Cover																									
Herb Stratum (Plot size 1m diam. )	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index Worksheet																					
1. <b><i>Athyrium filix-femina</i></b>	<b>30</b>	<b>Y</b>	<b>FAC</b>	Prevalence Index = B / A =																					
2. <b><i>Epilobium ciliatum</i></b>	<b>10</b>	<b>Y</b>	<b>FACW</b>																						
3. <b><i>Ranunculus repens</i></b>	<b>5</b>	<b>N</b>	<b>FAC</b>																						
4.																									
5.																									
6.																									
7.																									
8.																									
9.																									
10.																									
11.																									
_____ = Total Cover																									
Woody Vine Stratum (Plot size )	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators																					
1. <b><i>Rubus armeniacus</i></b>	<b>85</b>	<b>Y</b>	<b>FACU</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td><b>X</b></td> <td>Dominance test is &gt; 50%</td> </tr> <tr> <td></td> <td>Prevalence test is ≤ 3.0 *</td> </tr> <tr> <td></td> <td>Morphological Adaptations * (provide supporting data in remarks or on a separate sheet)</td> </tr> <tr> <td></td> <td>Wetland Non-Vascular Plants *</td> </tr> <tr> <td></td> <td>Problematic Hydrophytic Vegetation * (explain)</td> </tr> </table>	<b>X</b>	Dominance test is > 50%		Prevalence test is ≤ 3.0 *		Morphological Adaptations * (provide supporting data in remarks or on a separate sheet)		Wetland Non-Vascular Plants *		Problematic Hydrophytic Vegetation * (explain)											
<b>X</b>	Dominance test is > 50%																								
	Prevalence test is ≤ 3.0 *																								
	Morphological Adaptations * (provide supporting data in remarks or on a separate sheet)																								
	Wetland Non-Vascular Plants *																								
	Problematic Hydrophytic Vegetation * (explain)																								
2. <b><i>Solanum dulcamara</i></b>	<b>10</b>	<b>N</b>	<b>FAC</b>																						
_____ = Total Cover																									
% Bare Ground in Herb Stratum				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>																					
Remarks:																									

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 <sup>1</sup>	Loc <sup>2</sup>		
0-9	10 YR 2/2	90	10 YR 3/6	10	C	M	Sandy loam	
9-14	2.5 Y 3/1	100					Loamy sand with gravel	

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains    <sup>2</sup>Loc: PL=Pore Lining, M=Matrix

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

- |  |   |
|--|---|
| <input type="checkbox"/> Histosol (A1)                     | <input type="checkbox"/> Sandy Redox (S5)                         |
| <input type="checkbox"/> Histic Epipedon (A2)              | <input type="checkbox"/> Stripped Matrix (S6)                     |
| <input type="checkbox"/> Black Histic (A3)                 | <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) |
| <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 checked="" 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)                   |

**Indicators for Problematic Hydric Soils<sup>3</sup>**

- |   |
|---|
| <input type="checkbox"/> 2cm Muck (A10)             |
| <input type="checkbox"/> Red Parent Material (TF2)  |
| <input type="checkbox"/> Other (explain in remarks) |
| <input type="checkbox"/>                            |

<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if present):

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric soil present?

Yes

No

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators:**

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

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

*Secondary Indicators (2 or more required):*

- |   |
|---|
| <input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A & 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                           |

**Field Observations**

- |   |   |  |                |
|---|---|--|----------------|
| Surface Water Present?                          | <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No | Depth (in):    |
| Water Table Present?                            | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No            | Depth (in): 10 |
| Saturation Present? (includes capillary fringe) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No            | Depth (in): 5  |

Wetland Hydrology Present?

Yes

No

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

Remarks:

**DP- 2**

Project Site: <b>Thornquist Property</b>		Sampling Date: <b>08/28/2014</b>	
Applicant/Owner: <b>Thornquist</b>		Sampling Point: <b>DP- 2</b>	
Investigator: <b>N. Lund, K. Crandall</b>		City/County: <b>Kirkland</b>	
Sect., Township, Range: <b>S 25 T 26N R 04E</b>		State: <b>WA</b>	
Landform (hillslope, terrace, etc): <b>Hillslope</b>	Slope (%): <b>~8</b>	Local relief (concave, convex, none): <b>Convex</b>	
Subregion (LRR): <b>A</b>	Lat:	Long:	Datum:
Soil Map Unit Name: <b>AgC – Alderwood gravelly sandy loam</b>		NWI classification:	<b>NA</b>
Are climatic/hydrologic conditions on the site typical for this time of year? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		(If no, explain in remarks.)	
Are "Normal Circumstances" present on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> significantly disturbed?			
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> 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? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Is this Sampling Point within a Wetland? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Hydric Soils Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Remarks:	

**VEGETATION – Use scientific names of plants.**

Tree Stratum (Plot size 5m diam. )	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet																					
1.				Number of Dominant Species that are OBL, FACW, or FAC: <b>2</b> (A)																					
2.																									
3.																									
4.																									
_____ = Total Cover				Total Number of Dominant Species Across All Strata: <b>3</b> (B)																					
				Percent of Dominant Species that are OBL, FACW, or FAC: <b>67</b> (A/B)																					
Sapling/Shrub Stratum (Plot size 3m diam. )	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index Worksheet																					
1.				<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th colspan="2">Total % Cover of</th> <th>Multiply by</th> </tr> <tr> <td>OBL species</td> <td></td> <td>x 1 =</td> </tr> <tr> <td>FACW species</td> <td></td> <td>x 2 =</td> </tr> <tr> <td>FAC species</td> <td></td> <td>x 3 =</td> </tr> <tr> <td>FACU species</td> <td></td> <td>x 4 =</td> </tr> <tr> <td>UPL species</td> <td></td> <td>x 5 =</td> </tr> <tr> <td>Column totals</td> <td>(A)</td> <td>(B)</td> </tr> </table>	Total % Cover of		Multiply by	OBL species		x 1 =	FACW species		x 2 =	FAC species		x 3 =	FACU species		x 4 =	UPL species		x 5 =	Column totals	(A)	(B)
Total % Cover of		Multiply by																							
OBL species		x 1 =																							
FACW species		x 2 =																							
FAC species		x 3 =																							
FACU species		x 4 =																							
UPL species		x 5 =																							
Column totals	(A)	(B)																							
2.																									
3.																									
4.																									
5.																									
_____ = Total Cover																									
Herb Stratum (Plot size 1m diam. )	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index Worksheet																					
1. <i>Equisetum telmateia</i>	<b>50</b>	<b>Y</b>	<b>FACW</b>	Prevalence Index = B / A =																					
2. <i>Phalaris arundinacea</i>	<b>50</b>	<b>Y</b>	<b>FACW</b>																						
3.																									
4.																									
5.																									
6.																									
7.																									
8.																									
9.																									
10.																									
11.																									
_____ = Total Cover																									
Woody Vine Stratum (Plot size )	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators																					
1. <i>Rubus armeniacus</i>	<b>45</b>	<b>Y</b>	<b>FACU</b>	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td><b>X</b></td> <td>Dominance test is &gt; 50%</td> </tr> <tr> <td></td> <td>Prevalence test is ≤ 3.0 *</td> </tr> <tr> <td></td> <td>Morphological Adaptations * (provide supporting data in remarks or on a separate sheet)</td> </tr> <tr> <td></td> <td>Wetland Non-Vascular Plants *</td> </tr> <tr> <td></td> <td>Problematic Hydrophytic Vegetation * (explain)</td> </tr> </table>	<b>X</b>	Dominance test is > 50%		Prevalence test is ≤ 3.0 *		Morphological Adaptations * (provide supporting data in remarks or on a separate sheet)		Wetland Non-Vascular Plants *		Problematic Hydrophytic Vegetation * (explain)											
<b>X</b>	Dominance test is > 50%																								
	Prevalence test is ≤ 3.0 *																								
	Morphological Adaptations * (provide supporting data in remarks or on a separate sheet)																								
	Wetland Non-Vascular Plants *																								
	Problematic Hydrophytic Vegetation * (explain)																								
2.																									
_____ = Total Cover																									
% Bare Ground in Herb Stratum				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>																					
Remarks:																									

**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 <sup>1</sup>	Loc <sup>2</sup>		
0-12	10 YR 3/3	100					Sandy loam with gravel	

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains      <sup>2</sup>Loc: PL=Pore Lining, M=Matrix

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

- |  |   |
|--|---|
| <input type="checkbox"/> Histosol (A1)                     | <input type="checkbox"/> Sandy Redox (S5)                         |
| <input type="checkbox"/> Histic Epipedon (A2)              | <input type="checkbox"/> Stripped Matrix (S6)                     |
| <input type="checkbox"/> Black Histic (A3)                 | <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) |
| <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)                   |

**Indicators for Problematic Hydric Soils<sup>3</sup>**

- |   |
|---|
| <input type="checkbox"/> 2cm Muck (A10)             |
| <input type="checkbox"/> Red Parent Material (TF2)  |
| <input type="checkbox"/> Other (explain in remarks) |
| <input type="checkbox"/>                            |

<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if present):  
 Type: \_\_\_\_\_  
 Depth (inches): \_\_\_\_\_

Hydric soil present?      Yes       No

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators:**

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

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

*Secondary Indicators (2 or more required):*

- |   |
|---|
| <input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A & 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                           |

**Field Observations**

Surface Water Present?     Yes     No    Depth (in): \_\_\_\_\_  
 Water Table Present?     Yes     No    Depth (in): \_\_\_\_\_  
 Saturation Present?       Yes     No    Depth (in): \_\_\_\_\_  
 (includes capillary fringe)

Wetland Hydrology Present?      Yes       No

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

Remarks:      **Slightly moist, not saturated.**

**WETLAND FIELD DATA FORM – Thornquist property located at  
7845 NE 122<sup>nd</sup> Place, Kirkland, WA 98033.**

Rating done on August 28, 2014 by The Watershed Company.



WETLAND FIELD DATA FORM

**Wetland A**

BEGIN BY CHECKING ANY OF THE FOLLOWING (a. – e.) THAT APPLY:

- a. The wetland is contiguous to Lake Washington;
- b. The wetland contains at least 1/4 acre of organic soils, such as peat bogs or mucky soils;
- c. The wetland is equal to or greater than 10 acres in size and having three or more wetland classes, as defined by the U.S. Fish & Wildlife Service (Cowardin et al., 1979), one of which is open water;
- d. The wetland has significant habitat value to state or federally listed threatened or endangered wildlife species; or
- e. The wetland contains state or federally listed threatened or endangered plant species.

IF ANY OF THE CRITERIA LISTED ABOVE ARE MET, THEN THE WETLAND IS CONSIDERED TO BE TYPE 1. IF THAT IS THE CASE, PLEASE CONTINUE TO COMPLETE THE ENTIRE FORM, BUT DO NOT ASSIGN POINTS.

IF THE WETLAND DOES NOT MEET THE CRITERIA LISTED ABOVE FOR TYPE 1, COMPLETE THE ENTIRE FORM, USING THE ASSIGNED POINTS TO DETERMINE IF IT IS A TYPE 2 OR TYPE 3 WETLAND.

Type 2 wetlands typically have at least two wetland vegetation classes, are at least partially surrounded by buffers of native vegetation, connected by surface water flow (perennial or intermittent) to other wetlands or streams, and contain or are associated with forested habitat.

**1. Total wetland area**

Estimate wetland area and score from choices Acres	Point Value	<u>Points</u>
>20.00	= 6	
10-19.99	= 5	
5-9.99	= 4	
1-4.99	= 3	
0.1-0.99	= 2	
<0.1	= 1	

(1 point)

**2. Wetland classes: Determine the number of wetland classes that qualify, and score according to the table.**

	# of Classes	Points
<b>Open Water:</b> if the area of open water is >1/3 acre or >10% of the total wetland area	1	= 1
<b>Aquatic Beds:</b> if the area of aquatic beds is >10% of the <b>open water</b> area <b>or</b> >1/2 acre	2	= 3
<b>Emergent:</b> if the area of emergent class is >1/2 acre <b>or</b> >10% of the total wetland area	3	= 5
<b>Scrub-Shrub:</b> if the area of scrub-shrub class is >1/2 acre <b>or</b> >10% of the total wetland area	4	= 7
<b>Forested:</b> if the area of forested class is >1/2 acre or >10% of the total wetland area	5	= 10

**(1 point)**

**3. Plant species diversity.**

For all wetland classes which qualified in 2 above, count the number of different plant species and score according to the table below. You do not have to name them.

e.g., if a wetland has an aquatic bed class with 3 species, and emergent class with 4 species and a scrub-shrub class with 2 species, you would circle 2, 2, and 1 in the second column (below).

Class	# of Species	Point Value	Class	# of Species	Point Value
Aquatic Bed	1-2	= 1	Scrub-Shrub	1-2	= 1
	3	= 2		3-4	= 2
	>3	= 3		>4	= 3
Emergent	1-2	= 1	Forested	1-2	= 1
	3-4	= 2		3-4	= 2
	>4	= 3		>4	= 3

**(3 points)**

**4. Structural diversity.**

If the wetland has a forested class, add 1 point for each of the following attributes present:

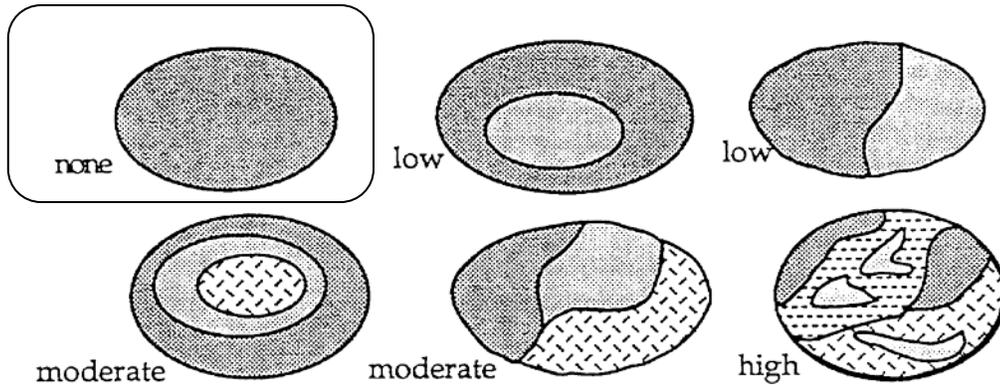
- Trees >50' tall = 1
- Trees 20' to 49' tall = 1
- shrubs = 1
- Herbaceous ground cover = 1

**(0 points)**

**5. Interspersion between wetland classes.**

Decide from the diagrams below whether interspection between wetland classes is high, moderate, low or none

- 3 = High
- 2 = Moderate
- 1 = Low
- 0 = None



(0 points)

**6. Habitat features**

Add points associated with each habitat feature listed:

- Is there evidence of current use by beavers? = 3
- Is a heron rookery located within 300'? = 2
- Are raptor nest(s) located within 300'? = 1
- Are there at least 2 standing dead trees (snags) per acre? = 1
- Are there any other perches (wires, poles, or posts)? = 1
- Are there at least 3 downed logs per acre? = 1

(0 points)

**7. Connection to streams**

Is the wetland connected at any time of the year via surface water? **(score one answer only)**

Is the wetland connected at any time of the year via surface water?

- To a perennial stream or a seasonal stream *with* fish = 5
- To a seasonal stream *without* fish = 3
- Is not connected to any stream = 0

(5 points)

**8. Buffers**

Step 1: Estimate (to the nearest 5%) the percentage of each buffer or land-use type (below) that adjoins the wetland boundary. Then multiply these percentages by the factor(s) below and enter result in the column to the right.

	% of Buffer	Step 1	Width Factor	Step 2
Roads, buildings or parking lots	<u>75</u> %	X 0 = <u>0</u>	<u>    </u> =	<u>    </u>
Lawn, grazed pasture, vineyards or annual crops	<u>    </u> %	X 1 = <u>    </u>	<u>    </u> =	<u>    </u>
Ungrazed grassland or orchards	<u>    </u> %	X 2 = <u>    </u>	<u>    </u> =	<u>    </u>
Open water or native grasslands	<u>    </u> %	X 3 = <u>    </u>	<u>    </u> =	<u>    </u>
Forest or shrub	<u>25</u> %	X 4 = <u>100</u>	<u>2</u> =	<u>200</u>
			Add buffer total	<u>200</u>

Step 2: Multiply result(s) of step 1:

By 1 if buffer width is 25-50'

By 2 if buffer width is 50-100'

By 3 if buffer width is >100'

Enter results and add subscores

Step 3: Score points according to the following table:

Buffer Total

900-1200 = 4

600-899 = 3

300-599 = 2

100-299 = 1

**(1 points)**

**9. Connection to other habitat areas:**

Is there a riparian corridor to other wetlands within 0.25 of a mile, or a corridor >100' wide with good forest or shrub cover to any other habitat area? = 5

Is there a narrow corridor <100' wide with good cover or a wide corridor >100' wide with low cover to any other habitat area? = 3

Is there a narrow corridor <100' wide with low cover or a significant habitat area within 0.25 mile but no corridor? = 1

Is the wetland and buffer completely isolated by development and/or cultivated agricultural land? = 0

**(1 points).**

**10. Scoring**

Add the scores to get a total: 12

Question: Is the total greater than or equal to 22 points?

Answer:

Yes = Type 2

No = Type 3

**WETLAND FIELD DATA FORM – Thornquist property located at  
7845 NE 122<sup>nd</sup> Place, Kirkland, WA 98033.**

Rating done on August 28, 2014 by The Watershed Company.



WETLAND FIELD DATA FORM

**Wetland B**

BEGIN BY CHECKING ANY OF THE FOLLOWING (a. – e.) THAT APPLY:

- a. The wetland is contiguous to Lake Washington;
- b. The wetland contains at least 1/4 acre of organic soils, such as peat bogs or mucky soils;
- c. The wetland is equal to or greater than 10 acres in size and having three or more wetland classes, as defined by the U.S. Fish & Wildlife Service (Cowardin et al., 1979), one of which is open water;
- d. The wetland has significant habitat value to state or federally listed threatened or endangered wildlife species; or
- e. The wetland contains state or federally listed threatened or endangered plant species.

IF ANY OF THE CRITERIA LISTED ABOVE ARE MET, THEN THE WETLAND IS CONSIDERED TO BE TYPE 1. IF THAT IS THE CASE, PLEASE CONTINUE TO COMPLETE THE ENTIRE FORM, BUT DO NOT ASSIGN POINTS.

IF THE WETLAND DOES NOT MEET THE CRITERIA LISTED ABOVE FOR TYPE 1, COMPLETE THE ENTIRE FORM, USING THE ASSIGNED POINTS TO DETERMINE IF IT IS A TYPE 2 OR TYPE 3 WETLAND.

Type 2 wetlands typically have at least two wetland vegetation classes, are at least partially surrounded by buffers of native vegetation, connected by surface water flow (perennial or intermittent) to other wetlands or streams, and contain or are associated with forested habitat.

**1. Total wetland area**

Estimate wetland area and score from choices	Acres	Point Value	<u>Points</u>
	>20.00	=	6
	10-19.99	=	5
	5-9.99	=	4
	1-4.99	=	3
	0.1-0.99	=	2
	<0.1	=	1

(1 point)

**2. Wetland classes: Determine the number of wetland classes that qualify, and score according to the table.**

	# of Classes	Points
<b>Open Water:</b> if the area of open water is >1/3 acre or >10% of the total wetland area	1	= 1
<b>Aquatic Beds:</b> if the area of aquatic beds is >10% of the <b>open water</b> area <b>or</b> >1/2 acre	2	= 3
<b>Emergent:</b> if the area of emergent class is >1/2 acre <b>or</b> >10% of the total wetland area	3	= 5
<b>Scrub-Shrub:</b> if the area of scrub-shrub class is >1/2 acre <b>or</b> >10% of the total wetland area	4	= 7
<b>Forested:</b> if the area of forested class is >1/2 acre or >10% of the total wetland area	5	= 10

**(3 point)**

**3. Plant species diversity.**

For all wetland classes which qualified in 2 above, count the number of different plant species and score according to the table below. You do not have to name them.

e.g., if a wetland has an aquatic bed class with 3 species, and emergent class with 4 species and a scrub-shrub class with 2 species, you would circle 2, 2, and 1 in the second column (below).

Class	# of Species	Point Value	Class	# of Species	Point Value
Aquatic Bed	1-2	= 1	Scrub-Shrub	1-2	= 1
	3	= 2		3-4	= 2
	>3	= 3		>4	= 3
Emergent	1-2	= 1	Forested	1-2	= 1
	3-4	= 2		3-4	= 2
	>4	= 3		>4	= 3

**(6 points)**

**4. Structural diversity.**

If the wetland has a forested class, add 1 point for each of the following attributes present:

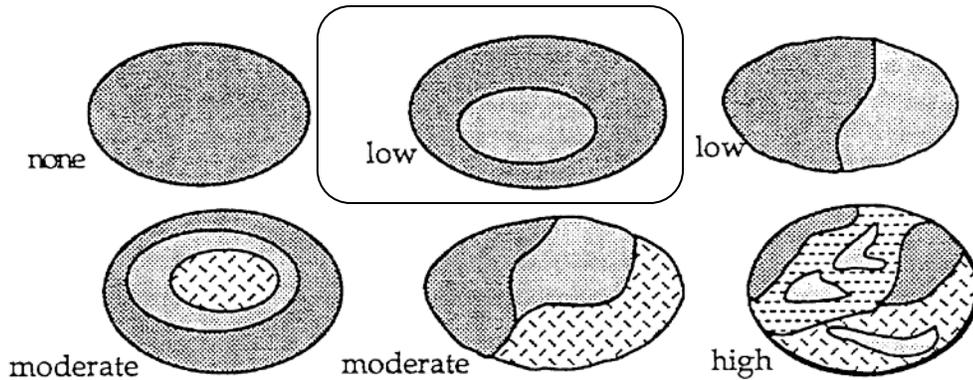
Trees >50' tall	= 1
Trees 20' to 49' tall	= 1
shrubs	= 1
Herbaceous ground cover	= 1

**(2 points)**

**5. Interspersion between wetland classes.**

Decide from the diagrams below whether interspection between wetland classes is high, moderate, low or none

- 3 = High
- 2 = Moderate
- 1 = Low
- 0 = None



(1 points)

**6. Habitat features**

Add points associated with each habitat feature listed:

- Is there evidence of current use by beavers? = 3
- Is a heron rookery located within 300'? = 2
- Are raptor nest(s) located within 300'? = 1
- Are there at least 2 standing dead trees (snags) per acre? = 1
- Are there any other perches (wires, poles, or posts)? = 1
- Are there at least 3 downed logs per acre? = 1

(0 points)

**7. Connection to streams**

Is the wetland connected at any time of the year via surface water? **(score one answer only)**

Is the wetland connected at any time of the year via surface water?

- To a perennial stream or a seasonal stream *with* fish = 5
- To a seasonal stream *without* fish = 3
- Is not connected to any stream = 0

(5 points)

**8. Buffers**

Step 1: Estimate (to the nearest 5%) the percentage of each buffer or land-use type (below) that adjoins the wetland boundary. Then multiply these percentages by the factor(s) below and enter result in the column to the right.

	% of Buffer	Step 1	Width Factor	Step 2
Roads, buildings or parking lots	<u>40</u> %	X 0 = <u>0</u>	<u>        </u> =	<u>        </u>
Lawn, grazed pasture, vineyards or annual crops	<u>        </u> %	X 1 = <u>        </u>	<u>        </u> =	<u>        </u>
Ungrazed grassland or orchards	<u>        </u> %	X 2 = <u>        </u>	<u>        </u> =	<u>        </u>
Open water or native grasslands	<u>        </u> %	X 3 = <u>        </u>	<u>        </u> =	<u>        </u>
Forest or shrub	<u>60</u> %	X 4 = <u>240</u>	<u>1</u> =	<u>200</u>
			Add buffer total	<u>200</u>

Step 2: Multiply result(s) of step 1:

By 1 if buffer width is 25-50'

By 2 if buffer width is 50-100'

By 3 if buffer width is >100'

Enter results and add subscores

Step 3: Score points according to the following table:

Buffer Total

900-1200 = 4

600-899 = 3

300-599 = 2

100-299 = 1

**(1 points)**

**9. Connection to other habitat areas:**

Is there a riparian corridor to other wetlands within 0.25 of a mile, or a corridor >100' wide with good forest or shrub cover to any other habitat area? = 5

Is there a narrow corridor <100' wide with good cover or a wide corridor >100' wide with low cover to any other habitat area? = 3

Is there a narrow corridor <100' wide with low cover or a significant habitat area within 0.25 mile but no corridor? = 1

Is the wetland and buffer completely isolated by development and/or cultivated agricultural land? = 0

**(1 points).**

**10. Scoring**

Add the scores to get a total: 20

Question: Is the total greater than or equal to 22 points?

Answer:

Yes = Type 2

No = Type 3

Wetland name or number   A  

**WETLAND RATING FORM – WESTERN WASHINGTON**

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

Name of wetland (if known):   Thornquist Property – Wetland A   Date of site visit:   08/28/2014  

N. Lund,

Rated by:   K. Crandall   Trained by Ecology? Yes  No  Date of Training   10/2008  

SEC:   25   TOWNSHIP:   26N   RANGE:   04E   Is S/T/R in Appendix D? Yes  No

**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	24
Score for Hydrologic Functions	18
Score for Habitat Functions	12
<b>TOTAL score for functions</b>	<b>54</b>

**Category based on SPECIAL CHARACTERISTICS of wetland**

I  II  Does not Apply

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

**II**

Check the appropriate type and class of wetland being rated.

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

Wetland name or number   A  

**Does the wetland unit being rated meet any of the criteria below?**

If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands That May Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1. <i>Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered <b>animal</b> or <b>plant</b> 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 <b>animal</b> 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 I 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

**\*The study area was reviewed for the presence of endangered, threatened, and priority species using WDFW online Priority Habitat and Species Data, PHS on the Web (<http://wdfw.wa.gov/mapping/phs/>).**

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

The hydrogeomorphic classification groups wetlands into those that function in similar ways. Classifying the wetland first simplifies the questions needed to answer how it 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 Wetland Units in Western Washington

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

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

If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)? **YES – Freshwater Tidal Fringe**    **NO – Saltwater Tidal Fringe (Estuarine)**

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

2. The entire wetland unit is flat and precipitation is only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit  
  NO – go to 3                        YES – The wetland class is **Flats**

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

3. Does the entire wetland unit **meet both** of the following criteria?  
  The vegetated part of the wetland is on the shores of a body of open water (without any vegetation on the surface) at least 20 acres (8 ha) in size;  
  At least 30% of the open water area is deeper than 6.6 ft (2 m)?  
  NO – go to 4                        YES – The wetland class is **Lake-fringe (Lacustrine Fringe)**

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

Wetland name or number   A  

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

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

The overbank flooding occurs at least once every two years

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

NO - go to 6

YES – The wetland class is **Riverine**

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

NO – go to 7

YES – The wetland class is **Depressional**

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

NO – go to 8

YES – The wetland class is **Depressional**

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

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

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

Wetland name or number   A  

R	Riverine and Freshwater Tidal Fringe Wetlands	Points
WATER QUALITY FUNCTIONS - Indicators that wetland functions to improve water quality		
R	<b>R 1. Does the wetland have the <u>potential</u> to improve water quality?</b>	<i>(see p. 52)</i>
R	R 1.1 Area of surface depressions within the riverine wetland that can trap sediments during a flooding event: Depressions cover >3/4 area of wetland ..... points = 8 Depressions cover > 1/2 area of wetland ..... points = 4 Depressions present but cover < 1/2 area of wetland ..... points = 2 No depressions present ..... points = 0	4
R	R 1.2 Characteristics of the vegetation in the wetland: Forest or shrub > 2/3 the area of the wetland ..... points = 8 Forest or shrub > 1/3 area of the wetland ..... points = 6 Ungrazed, emergent plants > 2/3 area of wetland ..... points = 6 Ungrazed emergent plants > 1/3 area of wetland ..... points = 3 Forest, shrub, and ungrazed emergent < 1/3 area of wetland ..... points = 0	8
R	<b>Total for R 1</b> <i>Add the points in the boxes above</i>	12
R	<b>R 2. Does the wetland have the <u>opportunity</u> to improve water quality? <i>(see p. 53)</i></b> 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.</i> <input type="checkbox"/> <input type="checkbox"/> Grazing in the wetland or within 150 ft <input checked="" type="checkbox"/> <input type="checkbox"/> Untreated stormwater discharges to wetland <input type="checkbox"/> <input type="checkbox"/> Tilled fields or orchards within 150 ft of wetland <input checked="" type="checkbox"/> <input type="checkbox"/> A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging <input checked="" type="checkbox"/> <input type="checkbox"/> Residential, urban areas, golf courses are within 150 ft of wetland <input type="checkbox"/> <input type="checkbox"/> 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 <input type="checkbox"/> <input type="checkbox"/> Other _____ <b>YES multiplier is 2      NO multiplier is 1</b>	multiplier <u>  2  </u>
R	<b>TOTAL - Water Quality Functions</b> Multiply the score from R 1 by R 2 <i>Add score to table on p. 1</i>	24

**Comments**

<b>R Riverine and Freshwater Tidal Fringe Wetlands</b>		
<b>HYDROLOGIC FUNCTIONS - Indicators that wetland functions to reduce flooding and stream erosion</b>		
	<b>R 3. Does the wetland have the <u>potential</u> to reduce flooding and erosion?</b>	<i>(see p. 54)</i>
<b>R</b>	<p>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: (width of wetland)/(width of stream).</i>                      If the ratio is more than 20..... points = 9                      If the ratio is between 10 – 20..... points = 6                      If the ratio is 5- &lt;10 ..... points = 4                      If the ratio is 1- &lt;5 ..... points = 2                      If the ratio is &lt; 1..... points = 1</p>	2
<b>R</b>	<p>R 3.2 Characteristics of vegetation that slow down water velocities during floods: <i>Treat large woody debris as “forest or shrub”.</i> Choose the points appropriate for the best description.                      Forest or shrub for &gt;1/3 area OR Emergent plants &gt; 2/3 area ..... points = 7                      Forest or shrub for &gt; 1/10 area OR Emergent plants &gt; 1/3 area ..... points = 4                      Vegetation does not meet above criteria..... points = 0</p>	7
<b>R</b>	<p><b>Total for R 3</b> <span style="float: right;"><i>Add the points in the boxes above</i></span></p>	9
<b>R</b>	<p><b>R 4. Does the wetland have the <u>opportunity</u> to reduce flooding and erosion? <i>(see p. 57)</i></b>                      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>  <input checked="" type="checkbox"/> <input type="checkbox"/> There are human structures and activities downstream (roads, buildings, bridges, farms) that can be damaged by flooding.  <input checked="" type="checkbox"/> <input type="checkbox"/> There are natural resources downstream (e.g. salmon redds) that can be damaged by flooding  <input type="checkbox"/> <input type="checkbox"/> Other _____  <i>(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)</i>                      YES multiplier is 2      NO multiplier is 1</p>	multiplier <u>  2  </u>
<b>R</b>	<p><b>TOTAL - Hydrologic Functions</b> Multiply the score from R 3 by R 4  <i>Add score to table on p. 1</i></p>	18

<b>These questions apply to wetlands of all HGM classes.</b> <b>HABITAT FUNCTIONS - Indicators that wetland functions to provide important habitat</b>	
<b>H 1. Does the wetland have the potential to provide habitat for many species?</b>	
<p>H 1.1 <u>Vegetation structure</u> (see p. 72)            Check the types of vegetation classes present (as defined by Cowardin) if the class is ¼ acre or covers more than 10% of the area of the wetland if unit smaller than 2.5 acres.</p> <p> <input type="checkbox"/> <input type="checkbox"/> Aquatic bed  <input type="checkbox"/> <input type="checkbox"/> Emergent plants  <input checked="" type="checkbox"/> <input type="checkbox"/> Scrub/shrub (areas where shrubs have &gt;30% cover)  <input type="checkbox"/> <input type="checkbox"/> Forested (areas where trees have &gt;30% cover)  <input type="checkbox"/> <input type="checkbox"/> Forested areas have 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon         </p> <p>Add the number of vegetation types that qualify. If you have:</p> <p style="text-align: right;">           4 structures or more ..... points = 4            3 structures ..... points = 2            2 structures ..... points = 1            1 structure ..... points = 0         </p>	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 ¼ acre to count. (see text for descriptions of hydroperiods)</p> <p> <input type="checkbox"/> <input type="checkbox"/> Permanently flooded or inundated                      4 or more types present ..... points = 3  <input checked="" type="checkbox"/> <input type="checkbox"/> Seasonally flooded or inundated                      3 types present ..... points = 2  <input type="checkbox"/> <input type="checkbox"/> Occasionally flooded or inundated                      2 types present ..... points = 1  <input type="checkbox"/> <input type="checkbox"/> Saturated only    1 types present ..... points = 0  <input checked="" type="checkbox"/> <input type="checkbox"/> Permanently flowing stream or river in, or adjacent to, the wetland  <input type="checkbox"/> <input type="checkbox"/> Seasonally flowing stream in, or adjacent to, the wetland  <input type="checkbox"/> <input type="checkbox"/> <b>Lake-fringe wetland = 2 points</b>  <input type="checkbox"/> <input type="checkbox"/> <b>Freshwater tidal wetland = 2 points</b> </p>	1
<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 ft<sup>2</sup>. (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 style="text-align: right;">           If you counted:                      &gt; 19 species ..... points = 2                5 - 19 species ..... points = 1                &lt; 5 species ..... points = 0         </p> <p>List species below if you want to:</p>	1

<p><b>H 1.4. Interspersion of habitats (see p. 76)</b> Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.</p> <p>None = 0 points    Low = 1 point    Moderate = 2 points</p> <p>High = 3 points    [riparian braided channels]</p> <p>NOTE: If you have four or more vegetation types or three vegetation types and open water the rating is always "high".</p>	1
<p><b>H 1.5. Special Habitat Features: (see p. 77)</b> 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> <ul style="list-style-type: none"> <li><input type="checkbox"/> <input type="checkbox"/> Large, downed, woody debris within the wetland (&gt;4in. diameter and 6 ft long).</li> <li><input type="checkbox"/> <input type="checkbox"/> Standing snags (diameter at the bottom &gt; 4 inches) in the wetland</li> <li><input checked="" type="checkbox"/> <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 for at least 33 ft (10m)</li> <li><input type="checkbox"/> <input type="checkbox"/> Stable steep banks of fine material that might be used by beaver or muskrat for denning (&gt;30degree slope) OR signs of recent beaver activity are present</li> <li><input type="checkbox"/> <input type="checkbox"/> At least ¼ acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated. (<i>structures for egg-laying by amphibians</i>)</li> <li><input type="checkbox"/> <input type="checkbox"/> Invasive plants cover less than 25% of the wetland area in each stratum of plants</li> </ul> <p><i>Note: The 20% stated in early printings of the manual on page 78 is an error.</i></p>	1
<p><b>H 1. TOTAL Score - potential for providing habitat</b> <i>Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5</i></p>	4

<b>H 2. Does the wetland have the opportunity to provide habitat for many species?</b>	
<p><b>H 2.1 Buffers</b> (<i>see p. 80</i>)  <i>Choose the description that best represents condition of buffer of wetland. 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"/> <input type="checkbox"/> ..... 100 m            (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water &gt;95% of circumference.            No developed areas within undisturbed part of buffer.            (relatively undisturbed also means no-grazing) ..... Points = 5</p> <p><input type="checkbox"/> <input type="checkbox"/> ..... 100 m (330 ft)            of relatively undisturbed vegetated areas, rocky areas, or open water &gt; 50% circumference..... Points = 4</p> <p><input type="checkbox"/> <input type="checkbox"/> ..... 50 m            (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water &gt;95% circumference..... Points = 4</p> <p><input type="checkbox"/> <input type="checkbox"/> ..... 100 m            (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water &gt; 25% circumference..... Points = 3</p> <p><input type="checkbox"/> <input type="checkbox"/> ..... 50 m            (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for &gt; 50% circumference..... Points = 3</p> <p style="text-align: center;"><b>If buffer does not meet any of the criteria above</b></p> <p><input type="checkbox"/> <input type="checkbox"/> No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland &gt; 95% circumference. Light to moderate grazing, or lawns are OK..... Points = 2</p> <p><input type="checkbox"/> <input type="checkbox"/> No paved areas or buildings within 50m of wetland for &gt;50% circumference. Light to moderate grazing, or lawns are OK..... Points = 2</p> <p><input type="checkbox"/> <input type="checkbox"/> Heavy grazing in buffer ..... Points = 1</p> <p><input type="checkbox"/> <input type="checkbox"/> Vegetated buffers are &lt;2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland ..... Points = 0</p> <p><input checked="" type="checkbox"/> Buffer does not meet any of the criteria above. Points = 1</p>	1
<p><b>H 2.2 Corridors and Connections</b> (<i>see p. 81</i>)</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 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 = <b>4 points</b> (<i>go to H 2.3</i>)      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 50ft wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? <b>OR a Lake-fringe wetland</b>, if it does not have an undisturbed corridor as in the question above?</p> <p style="text-align: center;">YES = <b>2 points</b> (<i>go to H 2.3</i>)      NO = H 2.2.3</p> <p>H 2.2.3 Is the wetland:            within 5 mi (8km) of a brackish or salt water estuary OR            within 3 mi of a large field or pasture (&gt;40 acres) OR  <div style="border: 1px solid black; padding: 2px; display: inline-block;">within 1 mi of a lake greater than 20 acres?</div> OR</p> <p style="text-align: center;">YES = <b>1 point</b>      NO = <b>0 points</b></p>	1

<p>H 2.3 <u>Near or adjacent to other priority habitats listed by WDFW (see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report <a href="http://wdfw.wa.gov/hab/phslist.htm">http://wdfw.wa.gov/hab/phslist.htm</a>)</u></p> <p>Which of the following priority habitats are within 330ft (100m) of the wetland? (NOTE: the connections do not have to be relatively undisturbed)</p> <p><input type="checkbox"/> <input type="checkbox"/> <b>Aspen Stands:</b> Pure or mixed stands of aspen greater than 0.4 ha (1 acres).</p> <p><input type="checkbox"/> <b>Biodiversity Areas and Corridors:</b> Areas of habitat that are relatively important to various species of native fish and wildlife (full description in WDFW PHS report p. 152)</p> <p><input type="checkbox"/> <b>Herbaceous Balds:</b> Variable size patches of grass and forbs on shallow soils over bedrock.</p> <p><input type="checkbox"/> <input type="checkbox"/> <b>Old-growth/Mature forests:</b> (<u>Old-growth west of Cascade crest</u>) 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) &gt; 81 cm (32 in) dbh or &gt; 200 years of age. (<u>Mature forests.</u>) Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less than 100%; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest.</p> <p><input type="checkbox"/> <input type="checkbox"/> <b>Oregon white Oak:</b> Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (full descriptions in WDFW PHS report p. 158.)</p> <p><input checked="" type="checkbox"/> <input type="checkbox"/> <b>Riparian:</b> The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.</p> <p><input type="checkbox"/> <input type="checkbox"/> <b>Westside Prairies:</b> Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (full descriptions in WDFW PHS report p. 161)</p> <p><input checked="" type="checkbox"/> <b>Instream:</b> The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.</p> <p><input type="checkbox"/> <b>Nearshore:</b> Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (full descriptions of habitats and the definition of relatively undisturbed are in WDFW report: pp. 167-169 and glossary in Appendix A.)</p> <p><input type="checkbox"/> <input type="checkbox"/> <b>Caves:</b> A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.</p> <p><input type="checkbox"/> <input type="checkbox"/> <b>Cliffs:</b> Greater than 7.6 m (25 ft) high and occurring below 5000 ft.</p> <p><input type="checkbox"/> <input type="checkbox"/> <b>Talus:</b> Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.</p> <p><input type="checkbox"/> <b>Snags and Logs:</b> Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of &gt;51 cm (20 in) in western Washington and are &gt; 2 m (6.5 ft) in height. Priority logs are &gt; 30cm (12 in) in diameter at the largest end, and &gt; 6m (20 ft) long.</p> <p style="padding-left: 40px;">If wetland has <b>3 or more</b> priority habitats = <b>4 points</b>          If wetland has <b>2</b> priority habitats = <b>3 points</b>          If wetland has <b>1</b> priority habitat = <b>1 point</b>          No habitats = <b>0 points</b></p> <p><i>Note: All vegetated wetland are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H2.4.</i></p>	<p>3</p>
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Wetland name or number   A  

<p>H 2.4 <u>Wetland Landscape</u> (<i>choose the <b>one</b> description of the landscape around the wetland that best fits</i>)  <i>(see p. 84)</i>            There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development. .... points = 5            The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile ..... points = 5            There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed ..... points = 3            The wetland is Lake-fringe on a lake <b>with</b> disturbance and there are 3 other lake-fringe wetland within ½ mile ..... points = 3            There is at least 1 wetland within ½ mile. .... points = 2            There are no wetlands within ½ mile ..... points = 0</p>	3
<p><b>H 2. TOTAL Score - opportunity for providing habitat</b>  <i>Add the scores from H2.1, H2.2, H2.3, H2.4</i></p>	8
<p>TOTAL for H1 from page 14</p>	4
<p><b>Total Score for Habitat Functions</b> – add the points for H 1, H 2 and record the result on p. 1</p>	12

Wetland name or number   A  

**CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS**

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

<b>Wetland Type</b> <i>Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.</i>	<b>Category</b>
<p><b>SC 1.0 Estuarine wetlands (see p. 86)</b>            Does the wetland unit meet the following criteria for Estuarine wetlands?</p> <p> <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"/> </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 332-151?</p> <p> <input type="checkbox"/> YES = Category I                      <input type="checkbox"/> NO = go to SC 1.2         </p>	<p><b>Cat. I</b></p>
<p>SC 1.2 Is the wetland unit at least 1 acre in size and meets at least two of the following three conditions?</p> <p> <input type="checkbox"/> YES = Category I                      <input type="checkbox"/> 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 the only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II) The are aof <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 ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed wetland.  <input type="checkbox"/> The wetland has at least 2 or the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.         </p>	<p><b>Cat. I</b></p> <p><b>Cat. II</b></p> <p><b>Dual rating I/II</b></p>

<p><b>SC 2.0 Natural Heritage Wetlands (see p. 87)</b></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? <i>(this question is used to screen out most sites before you need to contact WNHP/DNR)</i>          S/T/R information from Appendix D <input checked="" type="checkbox"/> or accessed from WNHP/DNR web site <input type="checkbox"/>          YES <input type="checkbox"/> – 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 or as a site with state threatened or endangered plant species?          YES = Category I      NO <input checked="" type="checkbox"/> Not a Heritage Wetland</p>	<p><b>Cat. I</b></p>
<p><b>SC 3.0 Bogs (see p. 87)</b></p> <p>Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? <i>Use the key below to identify if the wetland is a bog. If you answer yes, you will still need to rate the wetland based on its functions.</i></p> <ol style="list-style-type: none"> <li>1. Does the wetland have organic soils horizons (i.e. layers of organic soil), either peats or mucks, that compose 16” or more of the first 32 inches of the soil profile? (See Appendix B for a field key to identify organic soils.)              Yes - go to Q.3      NO - go to Q.2</li> <li>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 top of a lake or pond?              Yes - go to Q.3      NO <input checked="" type="checkbox"/> is not a bog for purpose of rating</li> <li>3. Does the wetland 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 species in Table 3)?              Yes – Is a bog for purpose of rating      NO - go to Q.4  <i>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.</i></li> <li>4. Is the wetland forested (&gt;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 (&gt;30% coverage of the total shrub/herbaceous cover)?              YES = Category I      NO <input checked="" type="checkbox"/> is not a bog for purpose of rating</li> </ol>	<p><b>Cat. I</b></p>



Wetland name or number   A  

<p><b>SC 6.0 Interdunal Wetlands (see p. 93)</b>          Is the wetland unit west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)?          YES – go to SC 6.1                      NO <input checked="" type="checkbox"/> not an interdunal wetland for rating  <i>If you answer yes you will still need to rate the wetland based on its functions.</i>          In practical terms that means the following geographic areas:              – Long Beach Peninsula – lands west of SR 103              – Grayland-Westport – lands west of SR 105              – Ocean Shores-Copalis – lands west of SR 115 and SR 109          SC 6.1 Is the wetland 1 acre or larger, or is it in a mosaic of wetlands that is 1 acre or larger?              YES = Category II                      NO – go to SC 6.2          SC 6.2 Is the unit between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre?              YES = Category III</p>	<p><b>Cat. II</b></p> <p><b>Cat. III</b></p>
<p><b>Category of wetland based on Special Characteristics</b>  <i>Choose the “highest” rating if wetland falls into several categories, and record on p. 1 .</i>          If you answered NO for all types enter “Not Applicable” on p.1.</p>	<p>NA</p>

Wetland name or number  B

**WETLAND RATING FORM – WESTERN WASHINGTON**

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

Name of wetland (if known):  Thornquist Property – Wetland B  Date of site visit:  08/28/2014

N. Lund,

Rated by:  K. Crandall  Trained by Ecology? Yes  No  Date of Training  10/2008

SEC:  25  TWSHP:  26N  RNGE:  04E  Is S/T/R in Appendix D? Yes  No

**SUMMARY OF RATING**

**Category based on FUNCTIONS provided by wetland**

I  II  III  IV

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

Score for Water Quality Functions	20
Score for Hydrologic Functions	18
Score for Habitat Functions	14
<b>TOTAL score for functions</b>	<b>52</b>

**Category based on SPECIAL CHARACTERISTICS of wetland**

I  II  Does not Apply

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

**II**

Check the appropriate type and class of wetland being rated.

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

Wetland name or number  B

**Does the wetland unit being rated meet any of the criteria below?**

If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands That May Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1. <i>Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered <b>animal</b> or <b>plant</b> 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 <b>animal</b> 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 I 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

**\*The study area was reviewed for the presence of endangered, threatened, and priority species using WDFW online Priority Habitat and Species Data, PHS on the Web (<http://wdfw.wa.gov/mapping/phs/>).**

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

The hydrogeomorphic classification groups wetlands into those that function in similar ways. Classifying the wetland first simplifies the questions needed to answer how it 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 Wetland Units in Western Washington

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

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

If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)? **YES – Freshwater Tidal Fringe** **NO – Saltwater Tidal Fringe (Estuarine)**

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

2. The entire wetland unit is flat and precipitation is only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit  
NO – go to 3                      YES – The wetland class is **Flats**

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

3. Does the entire wetland unit **meet both** of the following criteria?  
 The vegetated part of the wetland is on the shores of a body of open water (without any vegetation on the surface) at least 20 acres (8 ha) in size;  
 At least 30% of the open water area is deeper than 6.6 ft (2 m)?  
NO – go to 4                      YES – The wetland class is **Lake-fringe (Lacustrine Fringe)**

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

Wetland name or number \_\_\_B\_\_\_\_\_

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

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

The overbank flooding occurs at least once every two years

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

NO - go to 6

YES – The wetland class is **Riverine**

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

NO – go to 7

YES – The wetland class is **Depressional**

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

NO – go to 8

YES – The wetland class is **Depressional**

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

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

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

Wetland name or number  B

<b>R</b>	<b>Riverine and Freshwater Tidal Fringe Wetlands</b>	<b>Points</b>
WATER QUALITY FUNCTIONS - Indicators that wetland functions to improve water quality		
<b>R</b>	<b>R 1. Does the wetland have the <u>potential</u> to improve water quality?</b>	<i>(see p. 52)</i>
<b>R</b>	R 1.1 Area of surface depressions within the riverine wetland that can trap sediments during a flooding event: Depressions cover >3/4 area of wetland ..... points = 8 Depressions cover > 1/2 area of wetland ..... points = 4 Depressions present but cover < 1/2 area of wetland ..... points = 2 No depressions present ..... points = 0	<b>4</b>
<b>R</b>	R 1.2 Characteristics of the vegetation in the wetland: Forest or shrub > 2/3 the area of the wetland ..... points = 8 Forest or shrub > 1/3 area of the wetland ..... points = 6 Ungrazed, emergent plants > 2/3 area of wetland ..... points = 6 Ungrazed emergent plants > 1/3 area of wetland ..... points = 3 Forest, shrub, and ungrazed emergent < 1/3 area of wetland ..... points = 0	<b>6</b>
<b>R</b>	<b>Total for R 1</b> <i>Add the points in the boxes above</i>	<b>10</b>
<b>R</b>	<b>R 2. Does the wetland have the <u>opportunity</u> to improve water quality? <i>(see p. 53)</i></b> 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.</i> <input type="checkbox"/> <input type="checkbox"/> Grazing in the wetland or within 150 ft <input checked="" type="checkbox"/> <input type="checkbox"/> Untreated stormwater discharges to wetland <input type="checkbox"/> <input type="checkbox"/> Tilled fields or orchards within 150 ft of wetland <input checked="" type="checkbox"/> <input type="checkbox"/> A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging <input checked="" type="checkbox"/> <input type="checkbox"/> Residential, urban areas, golf courses are within 150 ft of wetland <input type="checkbox"/> <input type="checkbox"/> 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 <input type="checkbox"/> <input type="checkbox"/> Other _____ <b>YES multiplier is 2      NO multiplier is 1</b>	multiplier <u>2</u>
<b>R</b>	<b>TOTAL - Water Quality Functions</b> Multiply the score from R 1 by R 2 <i>Add score to table on p. 1</i>	<b>20</b>

**Comments**

<b>R Riverine and Freshwater Tidal Fringe Wetlands</b>		
<b>HYDROLOGIC FUNCTIONS - Indicators that wetland functions to reduce flooding and stream erosion</b>		
	<b>R 3. Does the wetland have the <u>potential</u> to reduce flooding and erosion?</b>	<i>(see p. 54)</i>
<b>R</b>	<p>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: (width of wetland)/(width of stream).</i>                      If the ratio is more than 20..... points = 9                      If the ratio is between 10 – 20..... points = 6                      If the ratio is 5- &lt;10 ..... points = 4                      If the ratio is 1- &lt;5 ..... points = 2                      If the ratio is &lt; 1..... points = 1</p>	2
<b>R</b>	<p>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.</i>                      Forest or shrub for &gt;1/3 area OR Emergent plants &gt; 2/3 area ..... points = 7                      Forest or shrub for &gt; 1/10 area OR Emergent plants &gt; 1/3 area ..... points = 4                      Vegetation does not meet above criteria..... points = 0</p>	7
<b>R</b>	<p><b>Total for R 3</b> <span style="float: right;"><i>Add the points in the boxes above</i></span></p>	<b>9</b>
<b>R</b>	<p><b>R 4. Does the wetland have the <u>opportunity</u> to reduce flooding and erosion? <i>(see p. 57)</i></b>                      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>  <input checked="" type="checkbox"/> <input type="checkbox"/> There are human structures and activities downstream (roads, buildings, bridges, farms) that can be damaged by flooding.  <input checked="" type="checkbox"/> <input type="checkbox"/> There are natural resources downstream (e.g. salmon redds) that can be damaged by flooding  <input type="checkbox"/> <input type="checkbox"/> Other _____  <i>(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)</i>                      YES multiplier is 2      NO multiplier is 1</p>	multiplier <u>2</u>
<b>R</b>	<p><b>TOTAL - Hydrologic Functions</b> Multiply the score from R 3 by R 4  <i>Add score to table on p. 1</i></p>	<b>18</b>

<b>These questions apply to wetlands of all HGM classes.</b> <b>HABITAT FUNCTIONS - Indicators that wetland functions to provide important habitat</b>	
<b>H 1. Does the wetland have the potential to provide habitat for many species?</b>	
<p>H 1.1 <u>Vegetation structure</u> (see p. 72)                      Check the types of vegetation classes present (as defined by Cowardin) if the class is ¼ acre or covers more than 10% of the area of the wetland if unit smaller than 2.5 acres.</p> <p> <input type="checkbox"/> <input type="checkbox"/> Aquatic bed  <input checked="" type="checkbox"/> <input type="checkbox"/> Emergent plants  <input type="checkbox"/> <input type="checkbox"/> Scrub/shrub (areas where shrubs have &gt;30% cover)  <input checked="" type="checkbox"/> <input type="checkbox"/> Forested (areas where trees have &gt;30% cover)  <input type="checkbox"/> <input type="checkbox"/> Forested areas have 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon                 </p> <p>Add the number of vegetation types that qualify. If you have:</p> <p style="text-align: right;">                     4 structures or more ..... points = 4                      3 structures ..... points = 2                      2 structures ..... points = 1                      1 structure ..... points = 0                 </p>	1
<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 ¼ acre to count. (see text for descriptions of hydroperiods)</p> <p> <input type="checkbox"/> <input type="checkbox"/> Permanently flooded or inundated                      4 or more types present ..... points = 3  <input checked="" type="checkbox"/> <input type="checkbox"/> Seasonally flooded or inundated                      3 types present ..... points = 2  <input type="checkbox"/> <input type="checkbox"/> Occasionally flooded or inundated                      2 types present ..... points = 1  <input type="checkbox"/> <input type="checkbox"/> Saturated only    1 types present ..... points = 0  <input checked="" type="checkbox"/> <input type="checkbox"/> Permanently flowing stream or river in, or adjacent to, the wetland  <input type="checkbox"/> <input type="checkbox"/> Seasonally flowing stream in, or adjacent to, the wetland  <input type="checkbox"/> <input type="checkbox"/> <b>Lake-fringe wetland = 2 points</b>  <input type="checkbox"/> <input type="checkbox"/> <b>Freshwater tidal wetland = 2 points</b> </p>	1
<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 ft<sup>2</sup>. (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 style="text-align: right;">                     If you counted:                      &gt; 19 species ..... points = 2                      5 - 19 species ..... points = 1                      &lt; 5 species ..... points = 0                 </p> <p>List species below if you want to:</p>	1

<p><b>H 1.4. Interspersion of habitats (see p. 76)</b> Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.</p> <p>None = 0 points    Low = 1 point    Moderate = 2 points</p> <p>High = 3 points    [riparian braided channels]</p> <p>NOTE: If you have four or more vegetation types or three vegetation types and open water the rating is always "high".</p>	2
<p><b>H 1.5. Special Habitat Features: (see p. 77)</b> 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> <ul style="list-style-type: none"> <li><input type="checkbox"/> <input type="checkbox"/> Large, downed, woody debris within the wetland (&gt;4in. diameter and 6 ft long).</li> <li><input type="checkbox"/> <input type="checkbox"/> Standing snags (diameter at the bottom &gt; 4 inches) in the wetland</li> <li><input checked="" type="checkbox"/> <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 for at least 33 ft (10m)</li> <li><input type="checkbox"/> <input type="checkbox"/> Stable steep banks of fine material that might be used by beaver or muskrat for denning (&gt;30degree slope) OR signs of recent beaver activity are present</li> <li><input type="checkbox"/> <input type="checkbox"/> At least ¼ acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated. (<i>structures for egg-laying by amphibians</i>)</li> <li><input type="checkbox"/> <input type="checkbox"/> Invasive plants cover less than 25% of the wetland area in each stratum of plants</li> </ul> <p><i>Note: The 20% stated in early printings of the manual on page 78 is an error.</i></p>	1
<p><b>H 1. TOTAL Score - potential for providing habitat</b> <i>Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5</i></p>	6

<b>H 2. Does the wetland have the opportunity to provide habitat for many species?</b>	
<p><b>H 2.1 Buffers</b> (<i>see p. 80</i>)  <i>Choose the description that best represents condition of buffer of wetland. 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"/> <input type="checkbox"/> ..... 100 m            (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water &gt;95% of circumference.            No developed areas within undisturbed part of buffer.            (relatively undisturbed also means no-grazing) ..... Points = 5</p> <p><input type="checkbox"/> <input type="checkbox"/> ..... 100 m (330 ft)            of relatively undisturbed vegetated areas, rocky areas, or open water &gt; 50% circumference..... Points = 4</p> <p><input type="checkbox"/> <input type="checkbox"/> ..... 50 m            (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water &gt;95% circumference..... Points = 4</p> <p><input type="checkbox"/> <input type="checkbox"/> ..... 100 m            (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water &gt; 25% circumference..... Points = 3</p> <p><input type="checkbox"/> <input type="checkbox"/> ..... 50 m            (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for &gt; 50% circumference..... Points = 3</p> <p style="text-align: center;"><b>If buffer does not meet any of the criteria above</b></p> <p><input type="checkbox"/> <input type="checkbox"/> No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland &gt; 95% circumference. Light to moderate grazing, or lawns are OK..... Points = 2</p> <p><input type="checkbox"/> <input type="checkbox"/> No paved areas or buildings within 50m of wetland for &gt;50% circumference. Light to moderate grazing, or lawns are OK..... Points = 2</p> <p><input type="checkbox"/> <input type="checkbox"/> Heavy grazing in buffer. .... Points = 1</p> <p><input type="checkbox"/> <input type="checkbox"/> Vegetated buffers are &lt;2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland ..... Points = 0</p> <p><input checked="" type="checkbox"/> Buffer does not meet any of the criteria above. Points = 1</p>	1
<p><b>H 2.2 Corridors and Connections</b> (<i>see p. 81</i>)</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 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 = <b>4 points</b> (<i>go to H 2.3</i>)      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 50ft wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? <b>OR a Lake-fringe wetland</b>, if it does not have an undisturbed corridor as in the question above?</p> <p style="text-align: center;">YES = <b>2 points</b> (<i>go to H 2.3</i>)      NO = H 2.2.3</p> <p>H 2.2.3 Is the wetland:</p> <p style="padding-left: 40px;">within 5 mi (8km) of a brackish or salt water estuary OR            within 3 mi of a large field or pasture (&gt;40 acres) OR            within 1 mi of a lake greater than 20 acres?</p> <p style="text-align: center;">YES = <b>1 point</b>      NO = <b>0 points</b></p>	1

<p>H 2.3 <u>Near or adjacent to other priority habitats listed by WDFW (see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report <a href="http://wdfw.wa.gov/hab/phslist.htm">http://wdfw.wa.gov/hab/phslist.htm</a>)</u></p> <p>Which of the following priority habitats are within 330ft (100m) of the wetland?          (NOTE: the connections do not have to be relatively undisturbed)</p> <p><input type="checkbox"/> <input type="checkbox"/> <b>Aspen Stands:</b> Pure or mixed stands of aspen greater than 0.4 ha (1 acres).</p> <p><input type="checkbox"/> <b>Biodiversity Areas and Corridors:</b> Areas of habitat that are relatively important to various species of native fish and wildlife (full description in WDFW PHS report p. 152)</p> <p><input type="checkbox"/> <b>Herbaceous Balds:</b> Variable size patches of grass and forbs on shallow soils over bedrock.</p> <p><input type="checkbox"/> <input type="checkbox"/> <b>Old-growth/Mature forests:</b> (<u>Old-growth west of Cascade crest</u>) 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) &gt; 81 cm (32 in) dbh or &gt; 200 years of age. (<u>Mature forests.</u>) Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less than 100%; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest.</p> <p><input type="checkbox"/> <input type="checkbox"/> <b>Oregon white Oak:</b> Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (full descriptions in WDFW PHS report p. 158.)</p> <p><input checked="" type="checkbox"/> <input type="checkbox"/> <b>Riparian:</b> The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.</p> <p><input type="checkbox"/> <input type="checkbox"/> <b>Westside Prairies:</b> Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (full descriptions in WDFW PHS report p. 161)</p> <p><input checked="" type="checkbox"/> <b>Instream:</b> The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.</p> <p><input type="checkbox"/> <b>Nearshore:</b> Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (full descriptions of habitats and the definition of relatively undisturbed are in WDFW report: pp. 167-169 and glossary in Appendix A.)</p> <p><input type="checkbox"/> <input type="checkbox"/> <b>Caves:</b> A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.</p> <p><input type="checkbox"/> <input type="checkbox"/> <b>Cliffs:</b> Greater than 7.6 m (25 ft) high and occurring below 5000 ft.</p> <p><input type="checkbox"/> <input type="checkbox"/> <b>Talus:</b> Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.</p> <p><input type="checkbox"/> <b>Snags and Logs:</b> Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of &gt;51 cm (20 in) in western Washington and are &gt; 2 m (6.5 ft) in height. Priority logs are &gt; 30cm (12 in) in diameter at the largest end, and &gt; 6m (20 ft) long.</p> <p style="padding-left: 40px;">If wetland has <b>3 or more</b> priority habitats = <b>4 points</b>          If wetland has <b>2</b> priority habitats = <b>3 points</b>          If wetland has <b>1</b> priority habitat = <b>1 point</b>          No habitats = <b>0 points</b></p> <p><i>Note: All vegetated wetland are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H2.4.</i></p>	<p>3</p>
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Wetland name or number  B

<p>H 2.4 <u>Wetland Landscape</u> (<i>choose the <b>one</b> description of the landscape around the wetland that best fits</i>)  <i>(see p. 84)</i>                  There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development. .... points = 5                  The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile ..... points = 5                  There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed ..... points = 3                  The wetland is Lake-fringe on a lake <b>with</b> disturbance and there are 3 other lake-fringe wetland within ½ mile ..... points = 3                  There is at least 1 wetland within ½ mile. .... points = 2                  There are no wetlands within ½ mile ..... points = 0</p>	<p>3</p>
<p><b>H 2. TOTAL Score - opportunity for providing habitat</b>  <i>Add the scores from H2.1, H2.2, H2.3, H2.4</i></p>	<p>8</p>
<p>TOTAL for H1 from page 14</p>	<p>6</p>
<p><b>Total Score for Habitat Functions</b> – add the points for H 1, H 2 and record the result on p. 1</p>	<p><b>14</b></p>

Wetland name or number   B  

**CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS**

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

<b>Wetland Type</b> <i>Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.</i>	<b>Category</b>
<p><b>SC 1.0 Estuarine wetlands (see p. 86)</b>            Does the wetland unit meet the following criteria for Estuarine wetlands?</p> <p><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.</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 332-151?</p> <p><input type="checkbox"/> YES = Category I                      <input type="checkbox"/> NO = go to SC 1.2</p>	<p><b>Cat. I</b></p>
<p>SC 1.2 Is the wetland unit at least 1 acre in size and meets at least two of the following three conditions?</p> <p><input type="checkbox"/> YES = Category I                      <input type="checkbox"/> 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 the only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II) The are aof <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 ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed wetland.</p> <p><input type="checkbox"/> The wetland has at least 2 or the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.</p>	<p><b>Cat. I</b></p> <p><b>Cat. II</b></p> <p><b>Dual rating I/II</b></p>

<p><b>SC 2.0 Natural Heritage Wetlands (see p. 87)</b></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? <i>(this question is used to screen out most sites before you need to contact WNHP/DNR)</i>          S/T/R information from Appendix D <input checked="" type="checkbox"/> or accessed from WNHP/DNR web site <input type="checkbox"/>          YES <input type="checkbox"/> – 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 or as a site with state threatened or endangered plant species?          YES = Category I      NO <input checked="" type="checkbox"/> Not a Heritage Wetland</p>	<p><b>Cat. I</b></p>
<p><b>SC 3.0 Bogs (see p. 87)</b></p> <p>Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? <i>Use the key below to identify if the wetland is a bog. If you answer yes, you will still need to rate the wetland based on its functions.</i></p> <ol style="list-style-type: none"> <li>1. Does the wetland have organic soils horizons (i.e. layers of organic soil), either peats or mucks, that compose 16” or more of the first 32 inches of the soil profile? (See Appendix B for a field key to identify organic soils.)              Yes - go to Q.3      NO - go to Q.2</li> <li>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 top of a lake or pond?              Yes - go to Q.3      NO <input checked="" type="checkbox"/> is not a bog for purpose of rating</li> <li>3. Does the wetland 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 species in Table 3)?              Yes – Is a bog for purpose of rating      NO - go to Q.4  <i>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.</i></li> <li>4. Is the wetland forested (&gt;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 (&gt;30% coverage of the total shrub/herbaceous cover)?              YES = Category I      NO <input checked="" type="checkbox"/> is not a bog for purpose of rating</li> </ol>	<p><b>Cat. I</b></p>



Wetland name or number   B  

<p><b>SC 6.0 Interdunal Wetlands (see p. 93)</b>          Is the wetland unit west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)?          YES – go to SC 6.1                      NO <input checked="" type="checkbox"/> not an interdunal wetland for rating  <i>If you answer yes you will still need to rate the wetland based on its functions.</i>          In practical terms that means the following geographic areas:              – Long Beach Peninsula – lands west of SR 103              – Grayland-Westport – lands west of SR 105              – Ocean Shores-Copalis – lands west of SR 115 and SR 109          SC 6.1 Is the wetland 1 acre or larger, or is it in a mosaic of wetlands that is 1 acre or larger?              YES = Category II                      NO – go to SC 6.2          SC 6.2 Is the unit between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre?              YES = Category III</p>	<p><b>Cat. II</b></p> <p><b>Cat. III</b></p>
<p><b>Category of wetland based on Special Characteristics</b>  <i>Choose the “highest” rating if wetland falls into several categories, and record on p. 1 .</i>          If you answered NO for all types enter “Not Applicable” on p.1.</p>	<p>NA</p>